Incorporating *International Commerce*

FEBRUARY 7, 1972

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Commerce Today

Coming Developments in Business and Technology

WHITE HOUSE CONFERENCE
1990
INDUSTRIAL WORLD AHEAD

A Look At Business In 20 Years
February 7-9, 1972

Special Issue

FROM THE
SECRETARY

Secretary Stans Bids Farewell With Look Ahead

The time has now come to bid my official farewell as Secretary of Commerce.

I do so with some regret, since I have enjoyed the many working relationships it has entailed. Above all, I could have had no greater privilege than to serve the President on behalf of the American enterprise system over these past three years.

President Nixon announced at the outset that he was assigning new and enlarged responsibilities to the Department of Commerce, and in carrying out my duties as Secretary—with assistance from some of the ablest and most dedicated employees in government—I have attempted diligently to make Commerce a far more effective instrument in its service to the American business system and to the nation.

In these three years we have launched new initiatives and strengthened existing capabilities. The results have been gratifying—in building trade relations, expanding the maritime fleet, developing minority business, and in seeking balanced, reasonable solutions to problems of improving the environment and protecting the consumer.

Throughout, we have sought to look ahead, as the President does, to the long-range interests of the nation, while working on the short-term solutions of immediate concerns.

1990 Conference

Nothing exemplifies this commitment to the future more than the 1990 Conference on the Industrial World Ahead, to which this special issue of COMMERCE TODAY is dedicated.

This Conference is an occasion for all of us to look up from the near-term pressures and view our society in a new perspective and depth. If we learn to think far ahead, we can avoid chaos in the years to come and plan intelligently for growth, economic progress and the kind of life we all desire.

American System

I have no doubt that the American business community will accept its full share of the burden and the responsibility for building a solid future.

The response of business and industry leaders to our various calls for assistance over these past three years has been most pleasing. In every instance they have demonstrated a strong sense of national responsibility and commitment.

The potential of the enterprise system is unlimited.

Two years ago we became the first nation in history to achieve a Gross National Product of $1 trillion. We are the envy of people everywhere. No other society can compare to ours.

We must hold fast to our free enterprise system. Wherever we find imperfections, we must correct them. But its unchanging principles are as sound today as they were when this nation was created two hundred years ago.

It is our legacy from the past, and it must be our bequest to the future. I know that Secretary Peterson, as a product and practitioner of the system, will be its advocate with great ability, wisdom and commitment.

Final Note

I depart with confidence that the Department of Commerce will be an increasingly valuable partner with the private economy in opening the future to a new day of common respect, increased prosperity, and cooperative solutions to the problems of our people, for business, labor and the American public.

And as my final word, I want to thank the thousands of able, dedicated and usually underappreciated civil servants who helped me so well in my strenuous efforts to build the performance and stature of the Department of Commerce.

Goodbye and good fortune!

Maurice H. Stans

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Vol. II, No. 9, February 7, 1972

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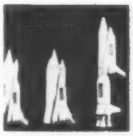

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COVER: *This is the insignia of the White House Conference concerning* The Industrial World Ahead: A Look At Business In 1990 *called by President Nixon which brings together leaders of industry, labor and government to discuss the issues expected to face U.S. industry in the future. See pages 4-55 for some of them.*

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ECONOMIC
HIGHLIGHTS

Downtrend In Rates Of Interest Reflects Success Of New Anti-Inflation Program

Economic Highlights is prepared by Dr. Harold C. Passer, Assistant Secretary for Economic Affairs, and is based on the latest economic indicators (see charts on adjoining page).

The downtrend in interest rates since last August 15 has been persistent and pervasive, reflecting the strong role that inflationary psychology had previously played in keeping borrowing costs at relatively high levels.

Both short- and long-term rates had turned upward last spring and early summer, but this upswing was reversed with the announcement of the Administration's New Economic Policy, and interest rates have been moving on a downward path ever since.

The levels of interest rates are determined by market conditions, but an "inflation premium" is added on when lenders believe that their loans will be repaid in cheaper dollars. A long period of inflation, such as the one that began in the mid 1960s, produces this inflationary psychology.

Since their peaks in the first half of 1970, long-term rates have fallen about 2 percentage points and short-term rates have plummeted by as much as 5 percentage points. The treasury bill rate is now around 3¼ percent, the lowest since the early 1960s, and several leading banks recently reduced their prime rate to 4½ percent, the lowest since the mid-1960s.

The decline in home mortgage interest rates since August has been an important factor in the continuing upsurge in homebuilding. This upsurge carried 1971 to an all-time high in housing starts.

Short-term interest rates have dropped so substantially that they may not fall much more. On the other hand, long-term rates may continue to decline since they apparently still contain some inflation premium. The Committee on Interest and Dividends, established to supervise the voluntary program on interest and dividends, said in a January 19 statement: "Since last summer a substantial part of the inflation premium has been wrung out of the interest rate structure. Continued progress in reducing the premium depends on the further reduction of inflationary expectations."

Further curbing of inflationary expectations will depend to a large extent on continued success in the anti-inflation program. During the wage-price freeze, consumer prices increased at an annual rate of less than 2 percent and wholesale prices declined. In the fourth quarter of 1971, the GNP deflator, the most comprehensive price yardstick, rose at an annual rate of only about 1.5 percent, the lowest rate in six years.

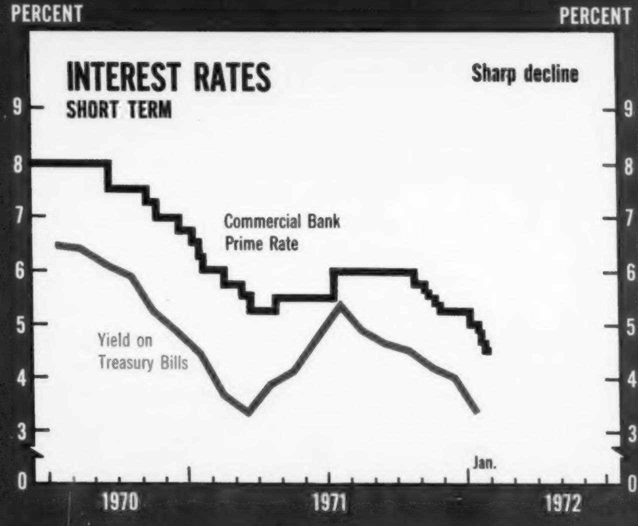
In December, both consumer and wholesale prices rose substantially, mainly because of increases in the largely uncontrolled farm and food prices and the "bubble effect"—the building up of price pressures during the freeze. Once the transition to the economic stabilization program has been completed, price increases are expected to moderate and to be in line with the targeted 2-3 percent annual rate by the end of 1972.

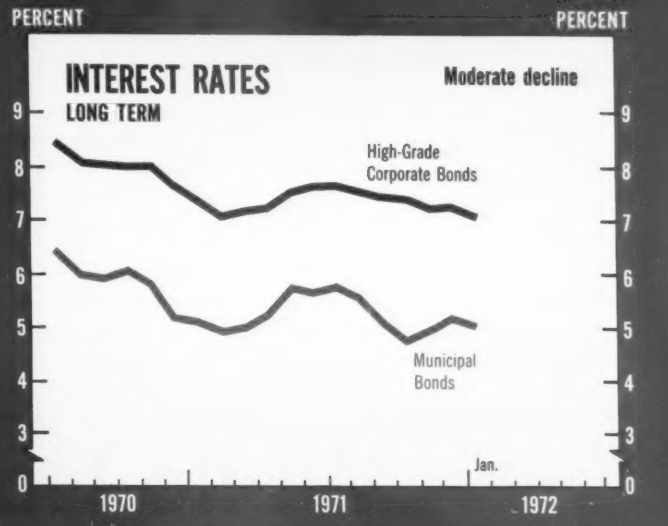
Other economic data

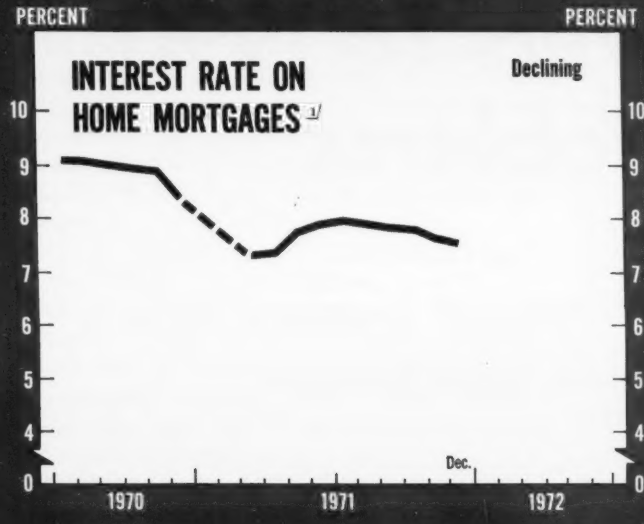
The composite index of leading indicators advanced strongly in November and December, reinforcing the uptrend that began 14 months ago. This provides additional evidence that the economy will expand vigorously this year.

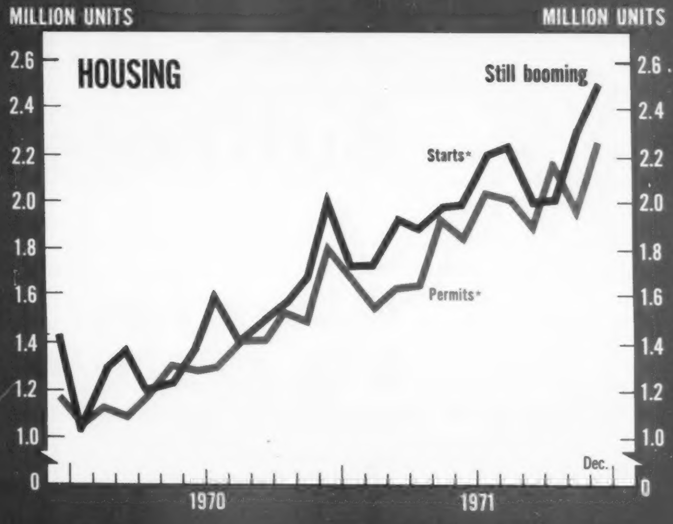
The nation's merchandise trade deficit amounted to $274 million in December, little changed from the average of the previous several months, and, as expected, the deficit for the year was about $2 billion. Since currency values have been adjusted and negotiations are under way on trade barriers, prospects are for some improvement in the trade picture in 1972.

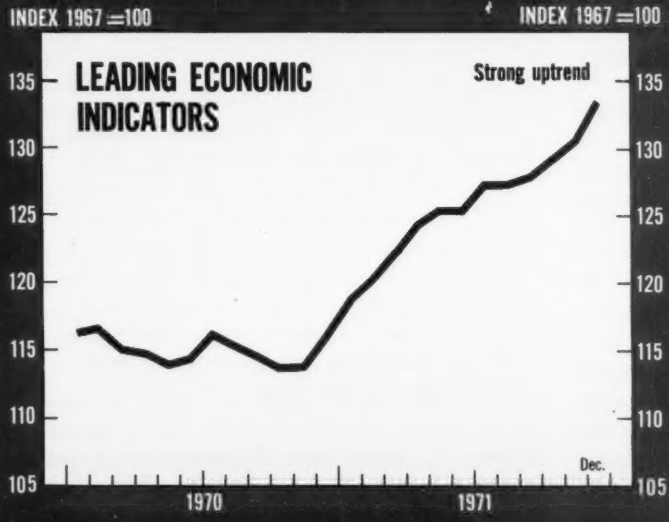
Latest Indicators

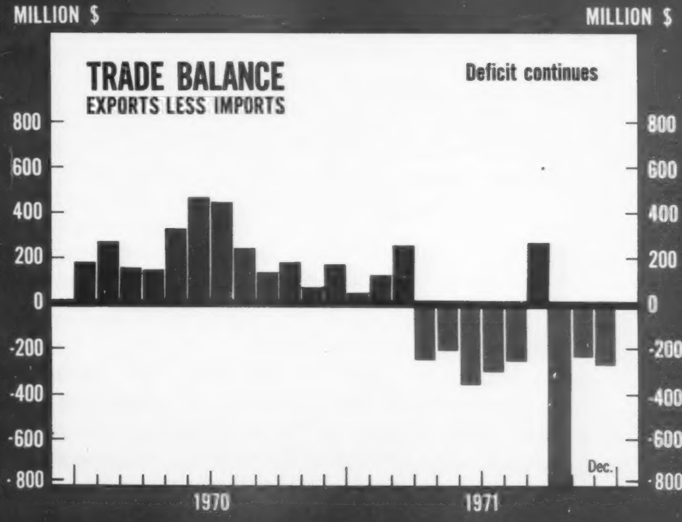

INTEREST RATES SHORT TERM — Sharp decline


INTEREST RATES LONG TERM — Moderate decline


INTEREST RATE ON HOME MORTGAGES 1/ — Declining


HOUSING — Still booming


LEADING ECONOMIC INDICATORS — Strong uptrend


TRADE BALANCE EXPORTS LESS IMPORTS — Deficit continues

*Annual rates

Data seasonally adjusted except interest rates

1/Secondary market yields on FHA mortgages

Commerce Today
Vol. II, No. 9
February 7, 1972

White House Conferees Seek Answers To 1990 Business Problems

Industry, Labor, Government Leaders' Aim Is To Avoid Nationwide Emergencies

In the interest of a good business climate for the U.S. in 1990, it is hoped a dialogue will develop across the country and turn into constructive action . . . the type of action that will preclude the decision-makers in 20 years wishing the leaders of today had done something about the issues these future leaders will face.

Today's leaders are meeting in the Capital today to examine the issues which might affect United States business and life in 1990. More than 1,500 men and women are participating in the Nation's first White House Conference called on business, and the first one on the future.

The Conference, *The Industrial World Ahead: A Look At Business In 1990* has been called by President Nixon because the United States needs to become increasingly aware of the changing values of society and be prepared to meet changes.

Editor's Note: More than 1,500 key leaders are attending the White House Conference, **The Industrial World Ahead, A Look At Business In 1990,** ***Feb. 7-9 in Washington, D.C. In order that*** **Commerce Today** ***readers may join the conferees in exploring problems which may confront business in 20 years, this special issue of the magazine is devoted to articles which probe the future and suggest some possible answers to the challenges of tomorrow.***

In announcing the Conference last April, the President said that "we must become managers of change. The private enterprise system is facing new challenges on every front. Corporations are being called upon increasingly to help provide solutions to complex National, social and economic problems. Business, labor and government must work in partnership for the public good."

The President stressed that it is now time for "key leaders with an interest in our industrial society to take a long-range look and develop policies that will help shape that future."

Both Secretary of Commerce Stans and Secretary of Labor James D. Hodgson, who co chair the White House Conference, feel that while it is not possible to predict the future twenty years from now, it is possible to prepare for it on the basis of reasonable assumptions and projections.

Past changes

The changes which have taken place in the last 20 years have been astronomical. In 1950, railroads still controlled the passenger business, and commercial U.S. jet travel was still eight years away. Transcontinental travel by automobile took at least a week of tedious, tiresome driving. Today superhighways stretch north and south and east and west, making traveling the country easy and fast, especially with the advancements made by comfortable, efficient cars.

Two decades ago, the items on today's supermarket shelves were not even thought about in food processing manufacturer's minds. Frozen orange juice, for example, had just been introduced, and was such an innovation that the president of its processing firm was interviewed on the then *new* televisions shows.

Twenty years ago, the word "automation" had just been coined. Going to the moon and exploring other planets was something to be dealt with by cartoonists in such strips as "Buck Rogers" and "Flash Gordon." The computer technology recognized today as an essential part of business life was still in its infancy.

In today's world, landings on the moon have become so routine that the public no longer stays up all night to view these historic events, unless some new innovation has been added. Perhaps the space shuttle program planned for 1973 may again capture the public's wonder.

In fact, flights by Mars and Venus have become almost routine, space satellites are piercing the electromagnetic radiations of our sun and stars, communications satellites are providing global TV and voice transmissions, and weather satellites are provid-

WHITE HOUSE CONFERENCE ON THE INDUSTRIAL WORLD AHEAD

A LOOK AT BUSINESS IN 1990

The following questions are some examples of issues which may be raised during the Conference. These issues are intended merely to stimulate thought.

Structure of the Private Enterprise System

Will the business-government relationship develop an identity similar to "Japan, Inc." or will it move toward complete separation: what form, between these two extremes, will this relationship eventually assume?

What new structures and laws can enhance the business-government interface in order to facilitate achievement of national goal?

Can a reformulation of antitrust policy better encourage domestic and international business competition?

Will the growing importance of the multinational corporation speed up the development of international business law and supranational institutions?

The Human Side Of Enterprise

To what extent should an affluent society provide jobs which are more interesting, rather than increase the amount of leisure time?

Will increasing affluence, abundance, education and leisure change the traditional work ethic, thus altering attitudes toward advancement, achievement, job loyalty and authority?

Will minority group workers, motivated by the lure of upward mobility, adhere to the traditional work ethic?

What meaningful work opportunities and incentives can be expected to motivate the service and knowledge worker?

Technology And Resources For Business

What impact can technology be expected to have upon values and social change?

Can the impact of applied technology be optimized while undesirable consequences are minimized?

What role can business play in developing new tools for analyzing and managing technological change?

What new mechanisms may be created outside of the market place, to satisfy the increasing need for long range planning and development of techology to meet domestic goals?

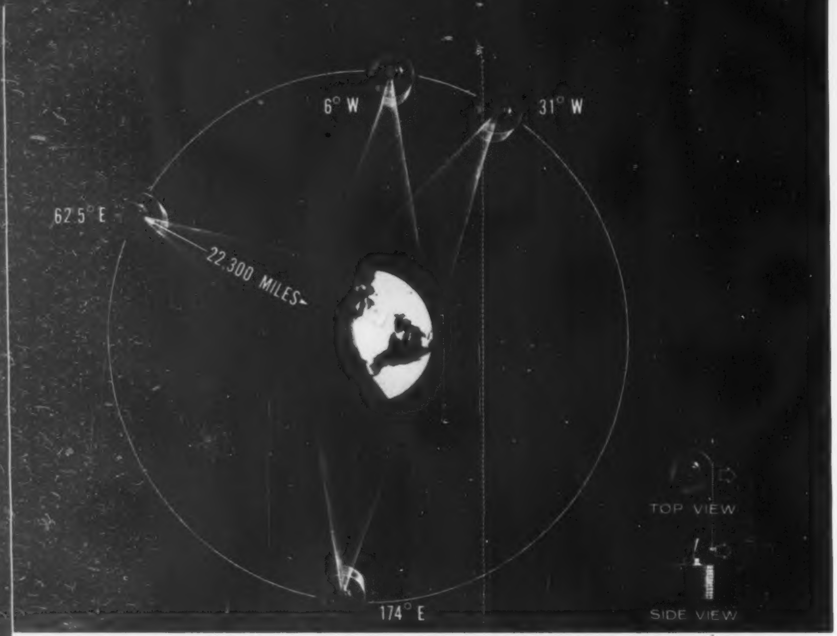
Social Responsibility Of Business

How can management skills and business know-how be mobilized to attack social and economic problems at a profit?

What strategies and analytical tools can business utilize to increase its flexibility in responding to and managing change?

Can business develop a system of "social indicators" to measure its social performance and forecast impending demands upon it?

Should a system of "social accounting" by business be developed to measure the cost of its social performance?



PIONEER GLOBAL SYSTEM—*The initial global communications satellite system consists of three INTELSAT III communication satellites with a design capacity of approximately 1,200 voice circuits.*

ing up-to-the-hour visuals. Technology is producing such new strides as microwave heat ovens, heat-resistant metals, new inroads in the fields of laser and maser technology, new synthetic fibers and finishes and heat-resistant paints. Industry is even experimenting with synthetic foods.

In the field of medicine, quantum jumps have been taken in developing antibiotics, in transplanting vital body organs. Scientists are even researching the question of possibly creating life itself.

Way of life

Change, in fact, has become almost a way of life in today's society. Although most of these changes have come about to improve the way of life of the American people and to raise its standard of living, each change has been accompanied with its own unique set of problems.

Unfortunately, these problems have descended in most cases at a time when each has reached crisis proportion. In trying to find solutions to the problems, the country has had to "react" to these situations, rather than acting upon them with sensible, thought-out balanced views. As a result, many times the solutions to the problems have been more critical than the problems themselves.

A good example of this is illustrated by the Nation's reactions to some of the industrial polluting problems recently decried by environmentalists. The detergent industry in attempting to eliminate the phosphate agents from its products acted to remove the phosphates and substitute another ingredient which would not pollute the waters of the country.

This new ingredient proved that it might be detrimental to health, while at the same time it was learned that phosphates weren't so bad anyway and did not cause as much harm to water as it was previously thought.

Color tissue scare

Housewives also became horrified by what was called the "great toilet paper scare of 1971," when they were advised to abandon use of colored tissue lest some harm befall the country's lakes and streams as the dyes reached them. Gradually, however, people came to realize this harm really wasn't so great, and learned that the bleaches for uncolored tissues might be just as bad—however bad that was.

As these crises reach Nationwide acclaim, certain areas ban the use of the products thought to cause the problem, consumers become rightly confused, and the manufacturer is caught in the middle.

Quick solutions to complex problems cannot be the answer. Secretary Stans said, "Timetables have been imposed, and regulations applied, giving some people a false feeling that the problem will all go away if only we put enough squeeze on business to act . . . many of the results have been beneficial to be sure, but some have been ill conceived and harmful to people, to business and to the country."

He added that before "we rush into immediate response to such problems" it may be prudent first "to take the time to know what we are doing. To weigh all the factors and the consequences involved."

Actually none of these problems facing the United States today are really new problems. Pollution was a problem in Philadelphia as far back as 1784, when Martha Washington wrote a niece that the atmosphere in that city "has caused sore eyes in many people, including my husband and myself." But today, the United States is "reacting" to that problem along with others, including consumerism, the energy crisis, the urban and inner city crisis and many others.

Getting all segments of the American

system to concentrate on what issues, such as these, may confront the Nation in 1990, may help business and industry to act on such problems then, rather than "react" to them.

Robert W. Miller, Executive Director of the White House Conference, said, "It is impossible to predict with any degree of accuracy all that the future holds. It is, however, possible to ascertain upcoming issues of importance to our society and to develop reasoned programs of action now."

Robert W. Miller
Executive Director
White House Conference

Some parts of the future are clearer than others. "We know far more about the shape of the future economy, for example, than we do about more abstract problems, such as ecology," Miller said. "We can predict economic figures and make plans based on these predictions."

These economic predictions have been made for 1990 for the use of the White House Conference attendees by The Conference Board of New York City, and have been prepared in a chart book for the use of the participants.

The Conference is proceeding under four main themes—"The Structure of the Private Enterprise System," "The Human Side of Enterprise," "Technology and Resources of Business," and "The Social Responsibility of Business." It will begin with an "Exploration of the Future," and a special session is being devoted to international trade relations of the future.

Miller stressed that the conferees will make no recommendations, but that all of the proceedings would be published, including the overview papers on each theme prepared in advance and mailed to all attendees to give them "thinking" material for their participation in the event.

Insight into issues

"It is hoped," he said, "that the input into the Conference will develop a clear insight into the major issues that may have to be faced in twenty years, and that a relatively comprehensive list of the choices business can make will also come out of the sessions."

"It is also hoped," he continued, "that this White House Conference on Business in 1990 will give incentive and motivation to everyone involved to continue with long-range plans and projections."

Miller expects the impact of the Conference to come when the attendees return home with the input and knowledge gained. "The thinking and utilization of the Conference thoughts can be applied in all walks of business. The leaders who participate may even introduce the concept locally and hold conferences on their own," he added.

Working together

Miller also stressed the importance of business, labor and academia and government working together. "We can't solve problems within one sector, because all problems cut across the entire sector."

"When we talk about private enterprise," he said, "business management is actually numerically the smallest part. It needs input from all of the other parts in order to really solve its problems."

"And," he concluded, "up to now the country has looked to the Federal Government to resolve the multitude of social and economic problems in our society.

"Today, however, most of our people have reached the point where they realize that government itself cannot find the answers. Private enterprise has the systems knowledge, the resources, and the people to resolve those issues.

"What is needed is a partnership between business and government which applies the genius of both to the solution of National problems." —*White House Conference*

Productivity, And Labor Force, Fueling Strong Future Economic Growth

Report Has Gains Rivaling Post-World War II Surge; Public Outlays Seen Remaining Stable

Continued growth through the decades of the 70s and the 80s is predicted for the U.S. economy, at rates even higher than the impressive gains made since World War II.

The Conference Board, a non-profit business research organization in New York City, projects a 4.2 percent rate of growth from 1969 to 1990 compared with 3.9 percent from 1948 to 1969. Even a slight change in the rate of growth means many billions of dollars in gross national product over a 20-year period. From 1948 to 1969, the GNP more than doubled, and it is very likely to double again in less than 20 years.

By 1990, the board estimates, the GNP will reach $2.4 trillion in terms of 1971 dollars compared with $1.05 trillion in 1971.

The projection by the board was made in a chartbook prepared for the White House Conference on *The Industrial World Ahead: A Look At Business In 1990*. The board analysts use 1969, a year of full employment, as the base year.

According to The Conference Board, the main propelling force behind this expected acceleration, which will be noticed in real Gross National Product, will be increases in the labor force, resulting from the baby boom of the late 40s and early 50s.

A. B. Trowbridge, President of the Board, said that "continued growth in output per man-hour, at rates not too dissimilar from those of the 50s and 60s" is another factor which will lead to an increased volume of production.

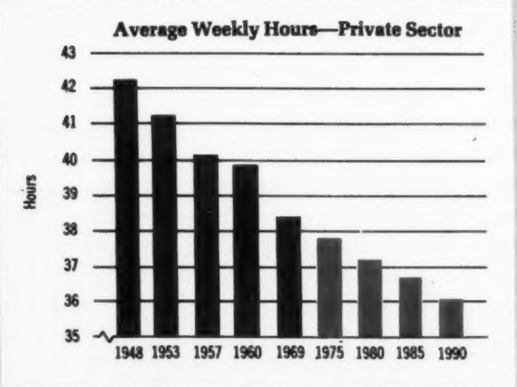
The board estimates the annual rates of growth of labor productivity in the private sector of 3 percent from 1969 to 1980, and of 3.4 percent from 1980 to 1990.

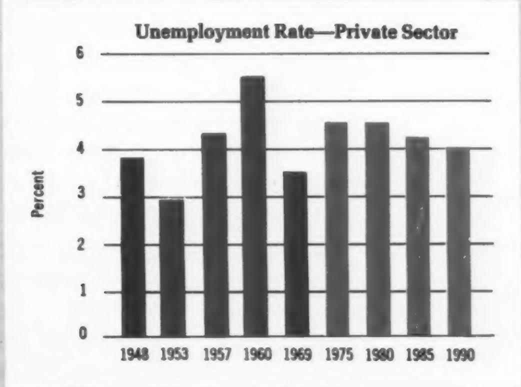
The rate for the next 10 years is lower than that expected for the next decade because it reflects the slowdown in U.S. productivity of the last five years.

This slowdown was in part related to the

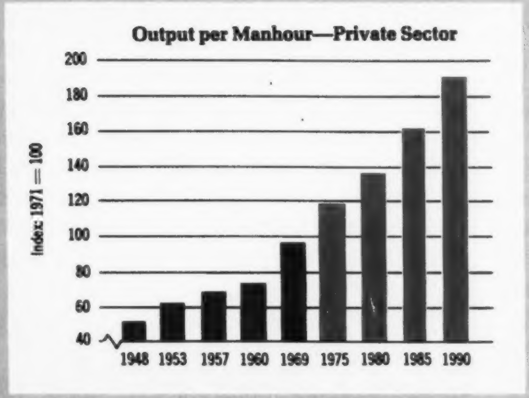
The U.S. Economy In 1990

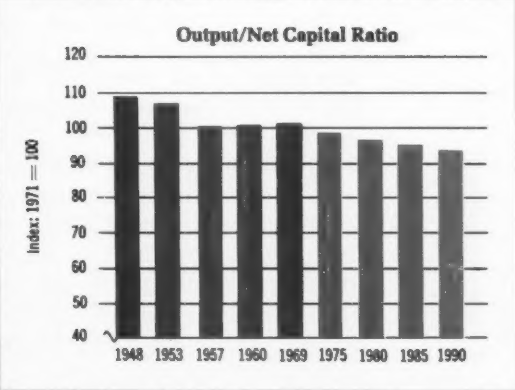
Utilization Of Labor


Average Weekly Hours—Private Sector

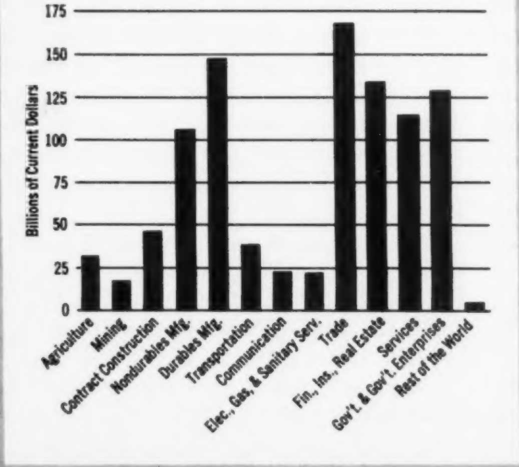

Unemployment Rate—Private Sector

Productivity Of Labor And Capital

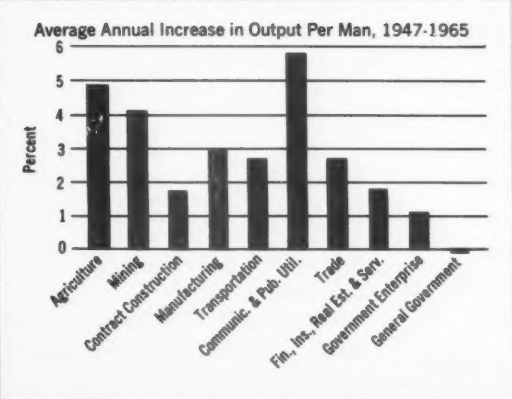

Output per Manhour—Private Sector


Output/Net Capital Ratio

Gross Product By Major Industry, 1970



Productivity Change By Major Industry


Average Annual Increase in Output Per Man, 1947-1965

recent recession but other factors causing it of longer term duration included:

- A decline in the growth rate of expenditures on research and development.
- A reduction of efficiency from the price rises which have occurred since the mid 1960s.
- An increase in the proportion of young inexperienced workers in the labor force.

These negative factors are expected to be eliminated by 1980, allowing the rate of productivity growth to be higher during the next decade.

Growth potential

Cyclical variations in the levels of activity may always be expected, but the growth pattern projected by The Conference Board represents a long-term trend, not a forecast for individual years.

The board sees as the main source of growth over the next 20 years the rise in GNP per worker. This rise is expected to climb from $12,500 in 1970 to $22,500 in 1990—at 1971 prices.

The jump in output per worker reflects productivity gains in the private sector, a continuing trend which has reflected fairly stable long-term rates of growth over the past 26 years.

By 1990, other projections are:

- Consumption expenditures will account for about 60 percent of GNP, approximately the same proportion as in the last two decades. These expenditures should exceed $1.5 trillion in terms of 1971 price levels—a rise of 135 percent in consumer purchases of goods and services.
- Government expenditures as a percentage of total output are expected to remain stable—approximately 24 percent of GNP, yielding a dollar total of $570 billion.
- Investment expenditures are expected to decline slightly from the 15 percent of GNP held through the 60s. The annual dollar amount should be $330 billion in 20 years.
- Net exports of goods and services, may rise in the 1980s but will probably level off in absolute terms after 1990—remaining a relatively minor component of GNP.

Today 90 percent of GNP is produced by the private sector. The Conference Board projects a rise in the private sector influence on GNP over the next two decades to $2,257 billion of goods and services attributed to it by 1990.

The chartbook points out that the gains in labor productivity stem largely from two sources: improvements in the skill of the labor force and increases in the quantity and quality of capital. The measurable inputs in the private sector are manhours worked and (services of) the net stock of capital.

Three factors determine the number of manhours worked in a given year: the size of the labor force, the unemployment rate, and average hours worked per year.

Size of the labor force. Drastic changes are expected in the size and composition of the labor force.

In the first place, the baby boom of the late 40s and 50s will expand the labor force by these children reaching employment age during the next few years. Before 1980, however, this growth rate will slow down, reflecting the decline in birthrates which began in the late 50s, steadily increasing through the 60s.

Another important factor which is making itself felt with force upon both the size and composition of the labor force, is the continuing influx of women on employment roles. In the past ten years, in fact, the number of women employed has increased three times as rapidly as the number of men in the labor force. Although some economists and labor statistical experts have expected this trend to level off and even slacken, the trend is still strong and may continue through the next two decades, increasing every bit as fast as it has since 1960.

Age composition

In addition, the age composition of the labor force will change dramatically. Although persons under 25 now make up 23 percent of the labor force, this will make up only 18 percent by 1990. Persons 25-34 currently make up 21 percent of the labor force; this age group will control 27 percent of it in 1990.

And, persons in middle years, from 35-54, who now represent 40 percent of the labor force, will only comprise 35 percent of it by 1980. This age group, however, will begin to expand during the following ten years, accounting for more than 40 percent of the labor force by 1990.

Unemployment rate. For 1975 and 1980, the Conference Board estimates, with an assumption of full employment at the 1969 level, the rate of unemployment will be 4.5 percent of the labor force. In 1990, this unemployment rate is expected to be as low as 4 percent.

The board assumed different rates of "full employment" for the two decades because of differences in rates of growth and in composition of the labor force. In the 1970s, growth of the labor force is expected to be more rapid with a larger proportion of young, inexperienced workers than in the 1980s.

Employment growth

The board said, "the growth of employment will be most rapid between 1969 and 1980, rising at an annual rate of 1.6 percent; thereafter it will slacken to 1.3 percent in the succeeding five years, and finally to 1.0 percent in the last five years studied. This slowdown is the result primarily of variations in the growth and composition of the population of working age."

Average weekly hours. The number of hours worked each week in the private sector should decline from today's norm of 38.3 to 36 over the next 20 years due mainly to the expected shorter workweek.

By contrast, the stated hours worked per week have remained fairly stable in recent years but the average hours worked per year have declined because of an increase in the number of holidays.

The drop in the average weekly hours worked represents a 6 percent overall decline, substantially less than the 9 percent decline registered in the previous 21 years (from 42.2 hours per week in 1948).

The board projects the manhour input for the future to grow at 1.1 percent per year from 1969 to 1990. This rate is nearly 50 percent greater than the change between 1948 and 1969.

As for the increase in the capital input, an average 4.8 percent per year growth is predicted from 1969 to 1990—measured as the net physical stock in the private sector.

Private sector real output is expected to rise 4.4 percent annually, and the output to net capital ratio should continue the downward trend that has been in evidence during the post World War II era.

For the 70s, the Conference Board projects a labor productivity increase of an average 3 percent per year. This rate should climb to 3.4 percent over the next ten years, as the negative factors previously pointed out disappear.

Although the board sounds confident in projecting an expanded economy through 1990, it is careful to point out that its look at the future and the figures estimated can only be obtained if research and development, and consequently the pursuit of technology, reverses its present tapering off tendencies.

The chartbook states that unless "real efforts are made to restore funding (for research and technology) to former levels, by either increased Federal support or its replacement by industry funds, the probabilities of achieving the rates of growth projected . . . are significantly lowered."

The book also predicts that real gross private domestic investment should more than double by 1990. This is by no means certain, however. The board explains that "if the U.S. chooses to pursue the goal of material economic growth less vigorously in the future than it has in the past, through change in National priorities or in individual life style, investment will clearly grow more slowly than projected."

Resources supply

The Conference Board also feel that *for the span covered by these projections,* "market forces and appropriate public actions will ensure a sufficient supply of resources."

Nuclear energy is projected to account for one third of total utility electric generation; continued increase in water use is seen for industry; increased demand for land for recreation and conservation will mark the decades; and metals present the greatest problem of future adequacy.

The chartbook also projects a continued shift in the mix of national output by industry and by type of product—from goods and structures towards service associated with goods production and distribution and toward services for final sales to consumers.

This shift has caused some fears for economic progress (in terms of GNP per capita), where some have felt continued increase in the share of employment by service might lead to a long-term slow-down.

"Service employment has, however," states the chartbook, "been increasingly relative to total employment for many decades, and despite this, the rate of productivity increase for the economy as a whole has actually risen in the long run."

Spreading Affluence, Population, Brighten 90s Business Outlook

Continuing Drift To Cities Seen, As Well As Dramatic Rise In Young Adult Population

In less than 20 years, there will be a tremendous increase in the amount of consumer purchasing power, and more importantly, the amount available to the average family unit will grow by almost 50 percent.

Income growing

As in the past 20 years, the total personal income will grow substantially—there will be more family units and more purchasing power per unit.

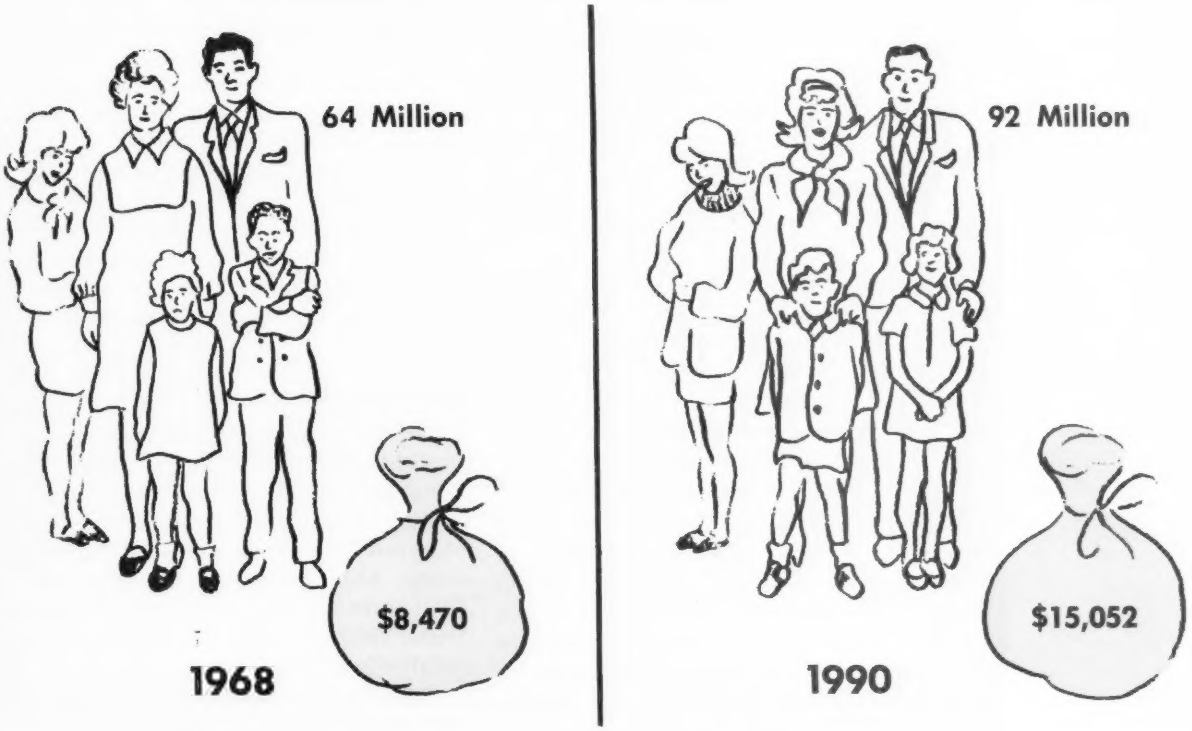
Projections by the Bureau of the Census indicate that the number of family units will grow to 92 million by 1990; that average income per unit will be $15,052 in terms of 1971 dollars; that total population will be 270 million or more; that the population will continue to drift toward the sea coast and the Great Lakes; and finally, that the movement toward metropolitan areas will slow down but people will continue to move from the city to the suburbs.

Although population growth and distribution of population are very important in assessing the consumer market of the future, the biggest change in the next 20 years could result from changes in average income. The increases per family unit are so huge that more of the income of the future may go for travel, higher education, recreation and other items usually associated with the affluent.

Affluent majority

Thus, there may well be an affluent majority. The Census projection of $15,052 is a median—half the family units are expected to have this amount of income or more. (A family unit is defined as a family in the traditional sense, a person living alone, or a group of individuals living together in the same household.) The amount of income *per person* may almost double by 1990. And all of these figures represent real purchasing power—the actual money figures probably will be larger if inflation continues in the 1980s and 1990s.

American Families And Unrelated Individuals



These figures do not represent certainties; there are merely projections based primarily on continuation of past trends in population and economic growth.

Based on these assumptions, total real income would more than double during the next 18 years. By 1990 family money income could exceed $1.3 trillion a year. This points to the income of families and unrelated individuals noted earlier of $15,052 based on a total population of about 270 millions and a total of 92 million families and unrelated individuals.

As to income distribution—in 1968 about 17 percent of the Nation's families and unrelated individuals had money incomes over $15,000. By 1990 it is estimated over half will fall into this category. Greatest gainers among families and unrelated individuals having incomes of less than $15,000 will be those in the lowest two categories—those with incomes of less than $5,000. These individuals and families, which in 1968 comprised 27 percent of the total, are expected to drop to about 15 percent by 1990.

The population of the United States could be in the neighborhood of 279 million in 1990 *if* in the intervening 18 years the American woman has more babies, on the average, than she does now.

On the other hand the population could be about 270 million *if* she has about the same number of babies as she does now. And, of course, the population could be lower than these figures *if* she chooses to have yet fewer babies.

And there are other variables, such as immigration-emigration and death rates, that exert a lesser influence on population growth or decline.

One can, however, despite all these possible variations, take a midpoint (Series C) in Bureau projections of the population and draw some reasonable inferences.

Births over deaths

For example, because population growth primarily is attributable to the excess of births over deaths it is probable the greatest absolute growth will occur in the most populous States—California, New York, Texas, New Jersey, Ohio, Illinois and Michigan. States that expect to gain over the next two decades because of in-migration are Cali-

Population And Projections By Age Groups

Age	1970 Totals *	1990 Projections *
25-29	13,758	20,392
30-34	11,520	21,212
35-39	11,208	19,579
40-44	11,918	17,309
45-49	12,210	13,671

* Figures in thousands

fornia, Arizona, Florida, Maryland, New Jersey and Connecticut. Most of the North Central States probably will continue to experience out-migration to other parts of the country.

It will be noted that most of the States that now are experiencing in-migration and expect this to continue are near the oceans or the Great Lakes. This reflects a continuing movement of the population to strips of cities, sometimes called megalopoli, lying along the east and west coasts and along the southern portion of the Great Lakes. In 1970 more than one sixth of the Nation's population resided in the belt of virtually connected metropolitan areas running from Boston down to Washington, D.C. In that belt are 34 contiguous metropolitan areas and two metropolitan New Jersey counties.

It is probable there will be a continuing movement into these "strip cities" on through 1990.

From a national point of view the most significant geographic shifts in population are those which have taken place and which are expected to continue in the central cities and the suburbs of metropolitan areas. About two out of every three Americans live in metropolitan areas. Between 1950 and 1960, when the population of the Nation rose by about 19 percent, the metropolitan areas grew by about 26 percent. During the 1960s, when the total population rise was about 13 percent, the rise in metropolitan areas was 17 percent. This indicates that although metropolitan areas are still growing more rapidly than the rest of the country the differential is narrowing and the result should be a general slowdown in the metropolitanization of the country.

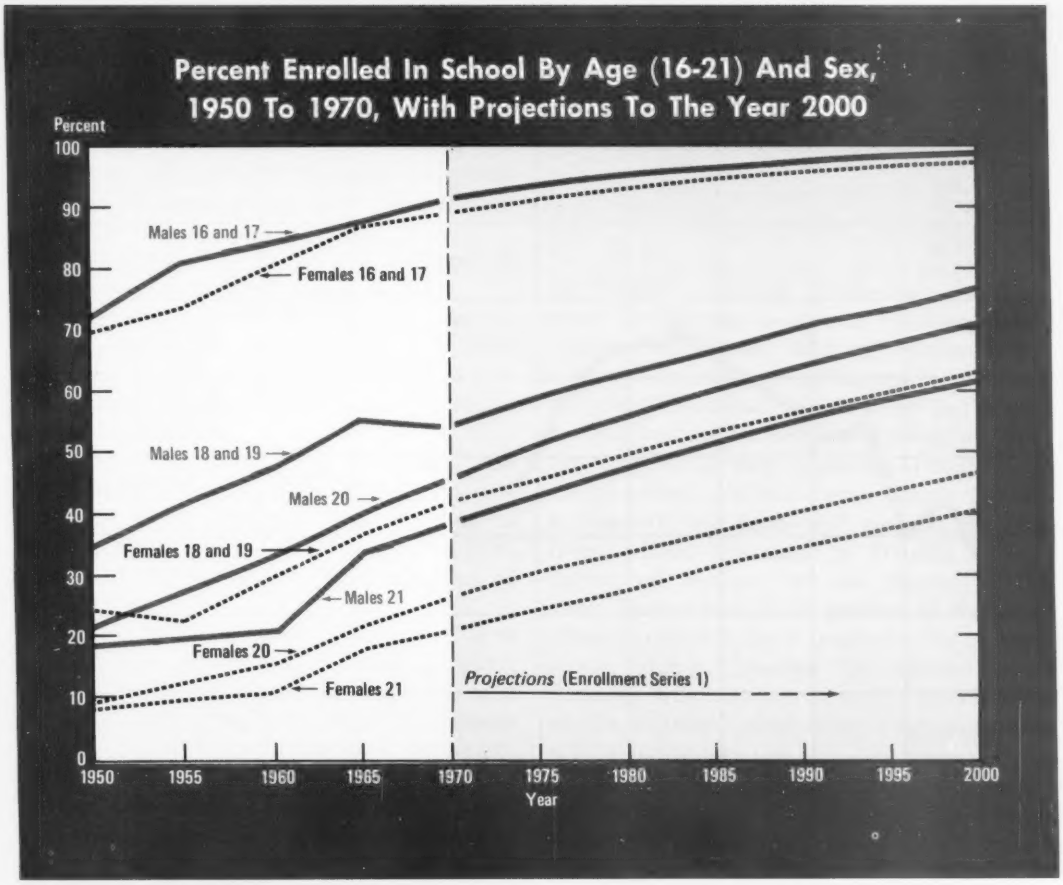
It is within the metropolitan areas however that population movement has continued at a high rate and is expected to continue unabated over the next few decades. In recent years, practically all of the growth in metropolitan areas was in the suburban rings. Between 1960 and 1970 central cities as a whole grew about 1 percent. The suburban rings, however, soared upward by 28 percent. This has caused a clear shift in the general picture of metropolitan areas between 1960 and the present. In 1960 the central cities had more residents than did the suburban rings but by 1970 this was exactly reversed—now more than half the people in the Nation's metropolitan areas live outside central cities and every population signpost indicates this fraction will grow.

Blacks concentrated

The black population is now more heavily concentrated in the central cities than the white population. About three fourths of the growth in the black population since 1960 has occurred in central cities of metropolitan areas. Although central cities gained more than three quarters of a million persons between 1960 and 1969, this net change was the result of a 2.7 million increase in the black population and a decline of 2.1 million in the white population.

Looking 18 years ahead, here's what population experts at the Census Bureau see in the 21st Decennial Census in 1990: if trends continue nearly half of the Nation's population will be living in the suburban rings around the cities in the Nation's metropolitan areas and only about one fourth will be living in the central cities. Virtually all of the white growth has occurred in the suburban rings while most of the black growth has taken place in the central cities. Unless there is a sharp change in trends observed in the decades between 1950 and 1970 one third of central city residents will be black by 1990 as compared with one fifth at present.

Fifty-five new metropolitan areas—a metropolitan area is defined generally as a city of 50,000 or more plus adjacent counties socially and economically integrated with that city—have been added to the 212 that were so designated by 1960. In addition, many of the existing ones, such as Washington, D.C., have been expanded to take in additional territory. It is probable that the number of metropolitan areas in the Nation will continue to rise and that more and more of them will be expanded to take in more territory.



Percent Enrolled In School By Age (16-21) And Sex, 1950 To 1970, With Projections To The Year 2000

In looking at the Nation's population distribution it is found that, for the Nation as a whole, population was lost during both the 1960 and 1970 decades in a broad belt of counties in the Middle West from the Dakotas and Minnesota to Texas and Louisiana and across the South to Georgia and South Carolina. In addition to this, there are areas in south Appalachia and in sections adjoining the northern Great Lakes which have a long history of population decline. The National Goals Research Staff says this trend means,

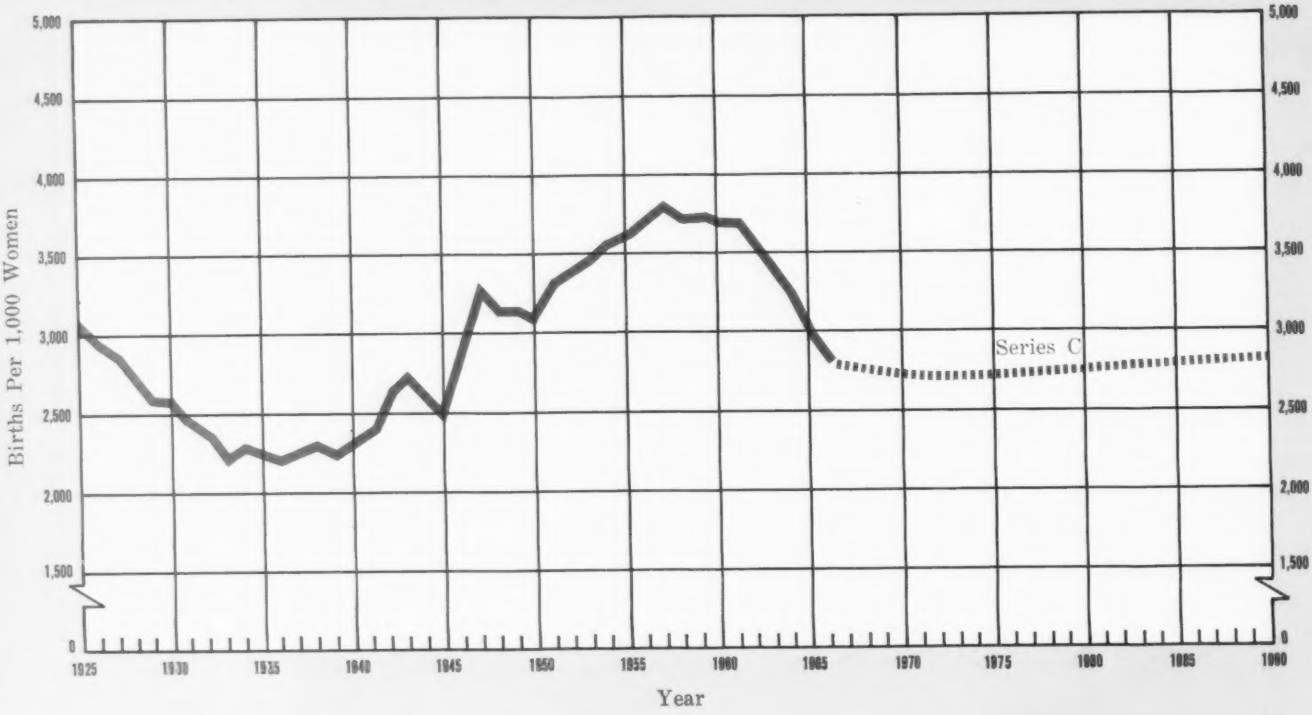
> "Hundreds of American towns will continue to lose young people and economic opportunity; and the large metropolitan areas, already burdened with social and fiscal problems and characterized by fragmentation of governmental responsibility, may reach a size at which they will be socially intolerable, politically unmanageable, and economically inefficient.
>
> "A deliberate policy of encouraging growth in alternate growth centers away from large urban masses, coupled with a complementary effort of the use of new towns, is a viable option that warrants consideration."

Alternative growth centers are defined this way: "Middle-sized communities, usually upwards of 50,000 but as small as 25,000, which are growing or have the potential for self-sustained growth."

Using the counts from the 1970 Census, the Bureau of the Census has begun to identify possible growth centers, giving primary consideration to such centers located within county groups showing an absolute decline. Two groups of growth centers are being identified—those having a city of 50,000 or more population and those having no city of 50,000 population. All are outside of the well known population corridors.

Although non-metropolitan counties in the U.S. are growing below the national average, those non-metropolitan counties crossed by a freeway and having a moderately sized urban center, between 25,000 and 50,000 people, are growing more rapidly than others. These counties, since 1960, grew at the same rate

Total Fertility Rates For The Total Population, By Calendar Years: 1925 To 1990



as the national average. The growth in these counties contradicts the popular notion that the Nation's population is on the high road to engulfing itself in a small number of big, densely packed urban centers.

Dramatic rise

As to the characteristics of Americans in 1990—most population signs point to a dramatic rise in the number of young adults between now and then. More than a quarter of the expected population increase—the increase of 62 million which appears in a "middle" series of projections of the Census Bureau—will be in the 30-to-40-years-of-age group. It is expected that by 1990 there will be as many as 32 million more persons in their late 20s, 30s, and 40s, than at present.

Most of the other large increases in the population will be apparent in the school age groups and among persons in the over-65 group. There will be little change in the numbers of those in their 50s, and early 60s.

There is a good expectation there will be a rapid rate of household formation—Census Bureau projections show the number ranging from 88 million to over 90 million households as against the 63 million figure at the time of the '70 census—and a relatively large number of births in the 1990 period. This will occur primarily because of the large number of young women, in their child-bearing years, in this period rather than a larger-than-usual number of children per mother. The high level of marriages, now at about 2 million a year—just about double the number in the early 30s—is expected to go yet higher and to reach a level of about 2.6 mllion by 1985. This marriage "boom" will generate a need for many new housing units. There may be a need for about 2 million new dwelling units per year over the next several decades to accommodate new families and to replace worn out housing units.

The expected trends in age distribution are likely to have an important impact on future school enrollments. The number of elementary school pupils will probably drop during the next few years, return to its present level by 1980, and then rise on through the mid-1980s. High school enrollment is expected to change relatively little through the next 18 years but the number of Americans attending college is expected to jump—to rise by over 50 percent! About half the expected rise in college enrollment will be due to population increase while the remainder will be due to the increasing number of young people—the greater proportion—desiring to attend college.

In looking at the Nation's agriculture in 1990, several factors must be assumed:

- That there will not be any major war, or similar catastrophe, involving the U.S. land areas,
- That farms will continue to be defined as they are at present,
- That Government farm programs will continue as at present, and
- That farm operators will continue to have available inputs of fertilizers, insecticides, and herbicides for the production of crops.

There should be an ample quantity of land available for agricultural purposes in 1990. Urban growth, industrial development, and highway construction will not remove a large amount of land from agriculture. Non-agricultural uses such as those mentioned above will not remove more than 5-8 million acres of cropland from the Nation's 1970 total of 336 million acres in production. A recent study by the U.S. Department of Agriculture, Economic Research Service, indicates that 49 million additional acres could be farmed if the need arose. This is in addition to the land currently held out of production under land retirement programs.

The number of farms has been declining at a rate of about 14 percent every five years. This decrease will tend to level out with a projection of about two million farms in 1980 and 1.5 million in 1990.

The projected 1.5 million farms in 1990 might be divided into three groups:

- Those with large farm products receipts, which would constitute about 20 percent of the total number;
- Those with medium farm receipts, which would constitute about 20 percent of the total; and
- Those with little or no farm products receipts—farms which are expected to comprise the remaining third of the total.

The first group of farms, about 300,000 in number, will have cash receipts in excess of $60,000 per farm annually and will account for 90 to 95 percent of the total cash receipts and 80 to 90 percent of the land used for agricultural purposes. These farms will account for the major part of the hired labor used in agriculture. Although farms of this type will be found in all agricultural areas, the greatest number will be found in the central part of the United States, ranging from the Canadian border to the Rio Grande.

A Series Of Population Projections To 1990

Year	Projection *
1975	**217,375**
1980	**233,798**
1985	**252,093**
1990	**269,673**

*** Figures in thousands**

The second group of farms, about 700,000 in number, will have cash receipts ranging from $5,000 upwards to $60,000. These farms will account for 4-6 percent of the farm income and 10-18 percent of the land. These farms will use a small amount of hired labor. Again, because the midsection of America will continue to be the breadbasket of the country, most of this type of farm will be in the corn belt.

The third group, the remaining 500,000, will be largely rural residences with a small amount of agricultural land. Using the present farm definition, they will be counted as farms, although the major part of their income will come from non-farm sources.

MORE IN 90s—*The number of Americans and their income will continue to grow in the 90s.*

The larger farms will continue to be the backbone of production. A larger and larger share of production will come from such farms in the future.

In 1900, each farm worker produced enough food to feed himself and six other persons. Fifty years later, each farmer was feeding 15.5 people, and by 1970, he was feeding 47 persons.

Producing food

By 1990, he may be producing enough food and fiber for 120-135 people. This projected rise in productivity will require an increased use of capital per farm worker. This means that the 1990 farmer will have to think in terms of production per man, not per farm, of:

- ► 700 to 800 acres of grain crops, or
- ► 1,000 to 1,500 hogs plus the production of feed for them, or
- ► 800 to 1,000 steers if feed is purchased, or
- ► 100 to 120 dairy animals plus the production of feed for them.

An industry which has been so successful in substituting mechanical energy for labor stands to realize much from the use of computers. No projection for 1990 can ignore the implications of this device.

The electronic computer will be crucial to many developments for agriculture. Access will expand from the present corporate user to the individual farmer. An ever increasing number of management decisions will be made with information supplied by the computer.

Farmers will look for ways of minimizing their risk and there will be more forward selling and contracting in production and marketing.

In addition, farm and related processing and marketing operations will become very highly coordinated for some commodities even though the farm operating unit may not be large. Commodities will be planted, harvested, processed, and packaged for the consumer all on the farm.

A 1990 farm sounds as though it may be entirely different from today's farm, but it is not out of reach; in fact, if one looks around, he can see examples today. For instance, many of the larger cattle feed lots are already approaching this concept; the U.S. has seen pork changed by consumer demand to a lean meat type hog and the Nation's plant people (botanist, geneticists, agronomist, etc.) have been performing wonders in developing new varieties for the future farmer and industry needs, even to the degree of developing a "wiener" shaped tomato for mechanical harvesting.

It seems like a long way off—the year 1990—and these changes seem impossible when first talked about.

However, in backing off and looking at them a second time, and beginning to reflect about changes already under way, the course has been charted and many of the steps have been taken.

The year 1990 looks like a year of food abundance for the U.S. population, the same type of abundance the people, as consumers, are taking for granted even today.

—Census Bureau

Most Major Industries Will Prosper In 1990

Prospects Less Bright For Aerospace, Others Facing Strong Foreign Competition

The business world of the 1990s promises opportunities for massive economic growth and new technology. American business will face serious challenges resulting from international competition and the need to deal with environmental and social problems.

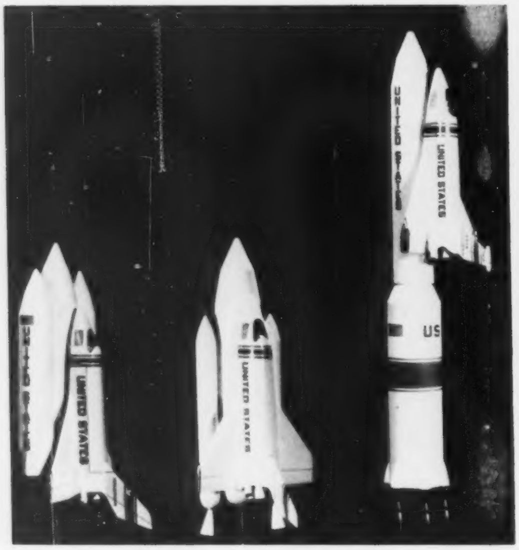
Future outlook

An examination of the prospects for 25 major industries, by the industry specialists of the Bureau of Domestic Commerce, indicates that the outlook for 20 years ahead is generally quite favorable. But there are major exceptions—the aerospace, consumer electronics, and electronic components industries—all of which face stiff foreign competition.

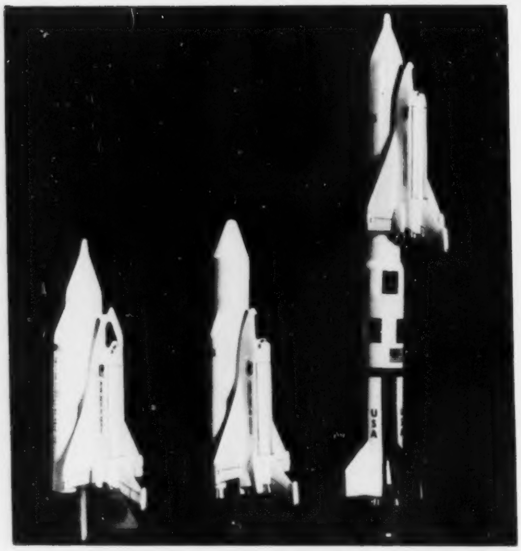
Among the most dramatic gains forecast between 1970 and 1990 are services (+650 percent), instruments (+280 percent), computers (+540 percent), aluminum (+360 percent), and copper (+490 percent).

Even more exciting are some of the technological changes predicted for the next 20 years such as the advent of wholly automated warehouses, the emergence of nuclear energy as the primary source for generating electric power, widespread use of videophone service, the development of modular kitchens and bathrooms for new construction, replacement of the regular automobile by sub-subcompacts powered by electric motors or greatly modified internal combustion engines, and the introduction of hypersonic aircraft.

To illustrate what may happen, BDC took a look at several individual industries, including projections of their 1990 levels of activity and the major factors and trends affecting these projections:



REUSEABLE ORBITER—*Grumman Aerospace Corp. and Boeing Co. designs for the proposed NASA shuttle. From left are recoverable liquid fueled rocket booster, expendable solid rocket booster and recoverable unmanned booster and manned orbiter.*



SPACE SHUTTLE—*North American Rockwell and General Dynamics' design of the space shuttle calls for a structure 36 stories high. From left are the expendable solid rocket booster, recoverable liquid fueled rocket booster and recoverable booster.*

AEROSPACE

The high technology United States aerospace industry is facing continuing problems of increasing risks, growing costs and dwindling profits which could threaten the viability of its contributions to national economic growth and security into the 1990's.

World leadership

The image of world leadership earned by the U.S. aerospace industry through high productivity in high technology products during the 1960's has been eroded since by the lack of new developments, in contrast with the continuing achievements of other countries.

The dominant market position of the U.S. industry is challenged by international consortia and foreign-government supported competition, which are determined to increase their share of the international aerospace market at an accelerating rate.

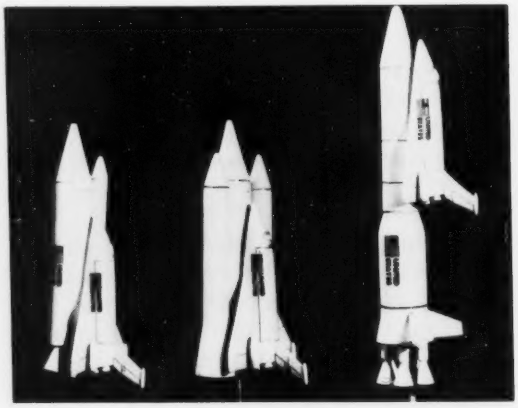
Wide-body transport aircraft will dominate new commercial aircraft sales over the next decade; more than 2,000 are expected to be in service by the end of 1980. The supersonic transports will start to enter service in the late 1970s but will not contribute substantially to airline fleet capacities until the 1980s.

During the 1980s, the reusable Space Shuttle System program will dominate United States space activities and is expected to set the stage for introduction of a 6,000 mile-per-hour hypersonic transport by 1990.

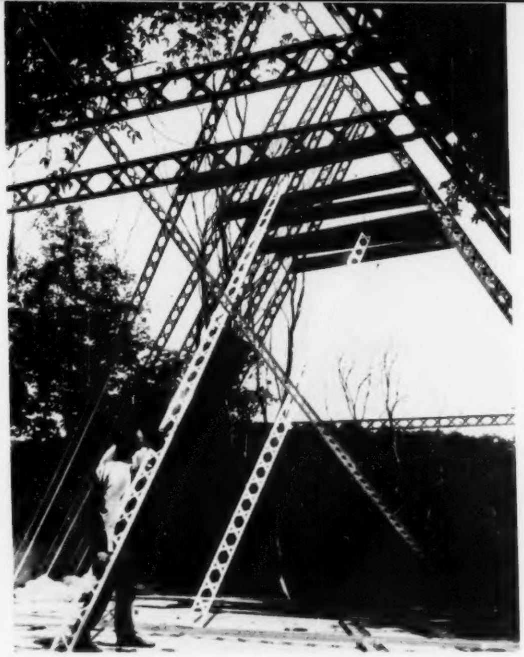
The U.S. share of the world aerospace market in 1990 could approximate $20 billion, compared to the 1968 high of $29 billion, if financial resources are available to launch major new research and development efforts.

Value of Shipments ($Bil.)

U.S. Aerospace Industry	*1960*	*1970*	*1990*
	$17.3	$26.5	$20.0



FUTURISTIC DESIGN—*The proposed NASA space shuttleconcepts with manned reusable orbiter includes these designs from McDonnell-Douglas Corp., Martin Marietta. From left are recoverable liquid fueled booster, expendable solid fueled rocket booster, and recoverable liquid fueled rocket booster.*



ALUMIFRAME—*What first appears to be the beginning of a cathedral in the wilderness is in reality an aluminum sanctuary of a different sort. Using Alcoa's ALUMIFRAME building system, a Pittsburgh resident builds this A-frame retreat with ordinary power tools in graceful aluminum spires.*

ALUMINUM

The aluminum industry has had a long-term rate of growth exceeding that of the general economy.

In recent years, the rate has slowed and the industry has had increasingly severe problems with higher costs, excess capacity, and lower prices and profits. If these problems can be overcome, the future should see continued growth, although at a rate somewhat less than the past long-term trend.

The growth rate for the period 1970-1990 has been estimated by various sources at 5 to 8 percent a year.

Major new applications for aluminum are expected in construction, autos and other transportation equipment, cans and packaging, electrical equipment and other fields.

Bauxite, the basic raw material, is plentiful from foreign sources, and domestic clays and other aluminum-bearing materials are being experimented with.

New methods of production, efficiencies in the industry and improvements in the supply of electrical power, vital in the manufacture of aluminum, may lead to lower costs and prices relative to other materials.

Value of Shipments
($Bil.)

	1960	*1970*	*1990*
Aluminum	$2.4	$2.5	$24.0

APPLIANCES

The long-range outlook for household appliances shows manufacturers' shipments of these products reaching $15.5 billion in 1990, or an average annual growth rate of 5.5 percent from estimated shipments of $5.3 billion in 1970. This outlook is based primarily on expected rises in consumer spending for durable goods, new households and new housing.

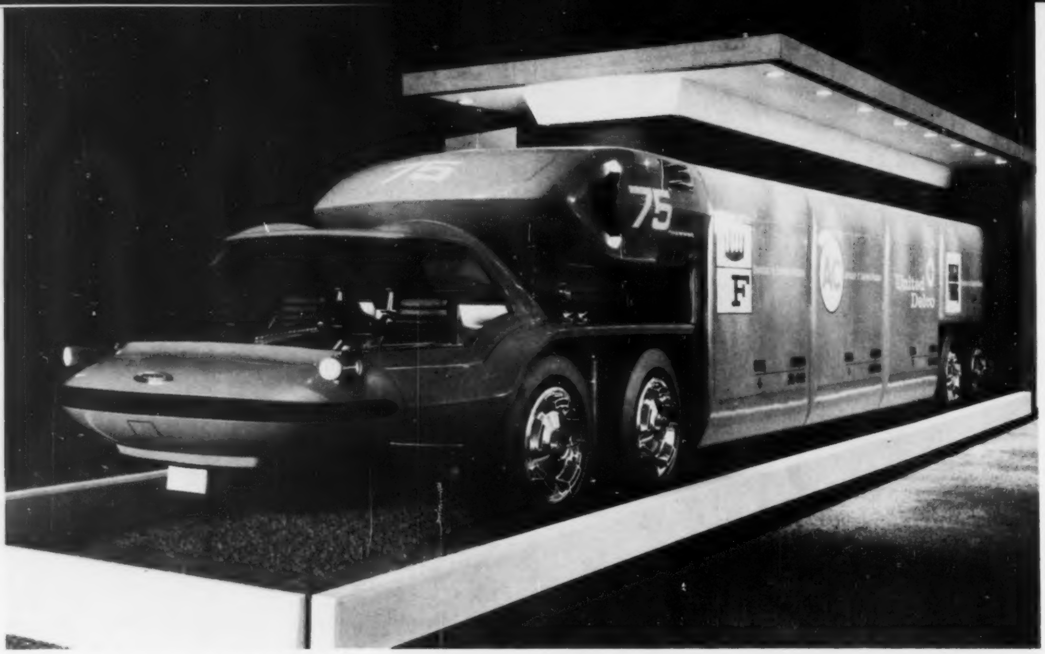
Trend increasing

Increased ownership of appliances is also expected to continue, following the general trend in this direction. Exceptions will be such products as refrigerators and irons, where saturation is now almost 100 percent and which depend on new households and replacement for most of their sales.

New products will contribute to the growth of the industry. At least several appliance firms are counting on the trash compactor, the only new major appliance to appear in recent years, to add to their sales. The microwave oven is also expected to become a much more important product.

Increased automation, including remote control, will play an important role in the design and operation of household appliances in the years ahead.

COOL HEAT COUNTER—*Westinghouse's kitchen of tomorrow features a cool heat countertop range. The future kitchen will be exhibited at the conference.*



THE BISON—*A twin-turbine freight hauler of sleek design which could carry containerized cargoes at new peaks of efficiency on tomorrow's express highways, is featured by General Motors. The Bison incorporates the latest innovations in handling, communications, maintenance and crew comfort.*

More built-in appliances are expected.

Industry leaders foresee the development of complete kitchen and bathroom modules, with built-in appliances, each designed to suit the housewife's tastes, as an attraction in 1990 housing construction.

CDA'S COPPER ELECTRIC CAR FOR DECADE 70

POLLUTION FREE CAR—*"Phase Two" of the copper and brass industry's emission-free "Copper Electric Car" is described as a "new breed of electric" that goes faster, accelerates more rapidly, has a greater range and recharges more quickly than previous electric vehicles, a problem for these cars to date. By 1990, this problem may be solved.*

	Value of Shipments ($Bil.)		
Household	*1960*	*1970*	*1990*
Appliances	$3.2	$5.3	$15.5

AUTOMOBILES

The regular size family passenger sedan as we know it today will probably not exist in 1990. Increased costs, forced upward by pollution abatement and safety requirements, will make today's favorite choice of the car buyer prohibitively expensive.

Sub-sub compacts

A new line of sub-sub compacts powered by electricity or a greatly modified internal combustion engine will appear to meet the demands of the mass market.

Imported automobiles with their smaller engine will continue to be in demand because of their lower price and lower operating costs.

Improved mass transit facilities will not substantially reduce the demand for private transportation.

	Value of Shipments ($Bil.)		
U.S. Automobile	*1960*	*1970*	*1990*
Industry	$13.4	$20.4	$38.4

COMMUNICATIONS AND ELECTRONICS EQUIPMENT

Communications and electronics equipment industries are expected to reach $55 billion in factory sales in 1990, reflecting an average annual growth rate of almost 8 percent.

This favorable outlook stems from the needs of the telecommunications services industries which currently are spending more than $10 billion annually to meet the demands for telephone, telegraph, data radiocommunication and broadcasting services. Also, there is increasing demand for electronic control and instrumentation equipment.

Expansion of conventional communications services and the addition of new services through research and development are planned by the telecommunications industries to enable man to communicate with any point on the globe.

Videophone service and high speed data transmission, for example, will be available over new wide band transmission systems throughout the country and to points overseas.

VIDEOPHONE—*Today's telephone conversations will be replaced by tomorrow's videophone. A young executive is shown using a futuristic videophone model in his office to talk to his wife at home.*

BANKING AND EDUCATION—*A console in the education room of Philco-Ford's "House of Tomorrow" allows a person to check his bank balance at the touch of a button. It also produces checks on weather conditions across the country by means of satellites.*

This growth of the telecommunications services industries will place heavy demands on the equipment manufacturing industries in the years ahead. It should result in the expansion of manufacturing facilities, increased expenditures for research and development, and rising employment if the industry can meet the competition of imported communications and electronics equipment.

	Value of Shipments ($Bil.)		
Communications	*1960*	*1970*	*1990*
Equipment	$6.0	$12.5	$55.0

COMPUTERS

The electronic computer industry will continue to grow throughout the world because computer technology is the key to modern technology. The impact of the computer on society is likely to be greater than the impact of machines during the industrial revolution.

The computer industry will increasingly become international and more consolidated because no firm will be able to operate successfully by marketing solely within its own boundaries.

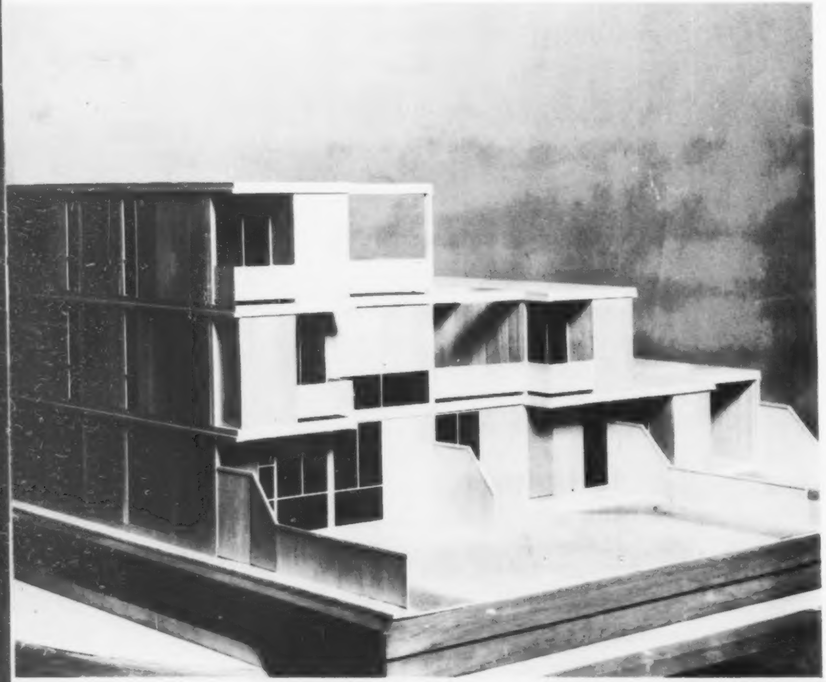
Emphasis will be on software. However, memory capacities will increase and provide data bases large enough for multiple applications, and peripherals will become increasingly versatile, faster and cheaper.

Terminals will become commonplace, providing low-cost access to data for a broader

RESULTS OF
YOUR TEST:
3 WRONG: YOU FLUNK
REFERENCE LECTURE
102 SUGGESTED

REPORT CARD—*The computer education room of Philco-Ford's "House of Tomorrow" will satisfy the learning needs of every member of the family.*

customer population. For example, on the immediate horizon is the computer-keyed cash register which retailers are planning to use to check on a customer's credit, itemize goods purchased and prepare the bill. Also, it will keep a running inventory of goods sold for sales trends and stock control purposes.



PROJECT PHOENIX—*Scale model of low income housing constructed in the Phoenix Project in Detroit. Commerce's National Bureau of Standards conducted performance tests to check the strength of the revolutionary new building system.*

The computer will be used as a tool in most phases of planning and operations as solutions are sought for social, environmental, and economic ills. It will be as common tomorrow as the telephone is today.

	Value of Shipments ($Bil.)		
Electronic	*1960*	*1970*	*1990*
Computers	$1.7	$6.9	$45.0

NEW CONSTRUCTION

The outlook for new construction in 1990 assumes a continuation of national housing goals aimed at providing adequate shelter for all American families.

It involves the elimination of virtually all substandard housing units. It assumes that most construction will take place within the largest 12 Standard Metropolitan Statistical Areas and that the growth of service and leisure time industries will exceed that of the industrial sector.

Demand for public utilities, including communication, transportation and energy resources, is expected to require significant new construction. Also foreseen is construction to provide more widespread hospital care facilities and for extending the average years of per pupil education.

Finally, the construction outlook is based on some shifts in demand in which the promotion of clean air, unpolluted water, and conservation and development objectives, through new construction, will be given higher priority than in the past.

	Value Put in Place ($Bil.)		
	1960	*1970*	*1990*
Construction	$54.6	$94.3	$385.0

CONSTRUCTION MACHINERY

In the years from 1970 to 1990, the U.S. construction machinery industry will continue to supply the U.S. market with most of its requirements; imports, although expected to increase in absolute value, will remain a small percentage of total domestic consumption.

The trend to sophisticated, larger, more productive and more expensive machines and equipment will continue. Health, environmental, and safety considerations will continue to be incorporated into new designs by improving cabs, and installing fatigue reducing seats, air conditioning, noise level reduction and exhaust control devices.

The dollar value of exports should remain steady at approximately $1.6 billion a year. The variety and sizes of equipment produced by U.S. subsidiaries abroad as well as by foreign competitors are growing and will be increasingly competitive with U.S. exports in overseas markets.

The construction machinery and equipment industry, although not expected to grow dramatically, will continue to be an important segment of American industry.

	Value of Shipments ($Bil.)		
Construction	*1960*	*1970*	*1990*
Machinery	$2.0	$4.5	$8.8

CONSUMER ELECTRONIC PRODUCTS

By 1990, assuming that present trends continue, the bulk of electronics consumer products sold in the U.S. will be made abroad. These products will be provided by U.S. producers in labor intensive countries, foreign manufacturers or by foreign producers that have established assembly facilities in the U.S. Many U.S. producers use imported parts and components.

Presently, there are no U.S. manufactured tape recorders on the consumer market. The sole U.S. major home radio manufacturing facility is scheduled to move overseas. More than 50 percent of black and white and almost 18 percent of color TV sales in the U.S. are imports.

The major factor in consumer preferences for imports are style, performance, and price.

	Value of Shipments ($Bil.)		
Consumer	*1960*	*1970*	*1990*
Electronics	$1.7	$3.7	$6.6

COPPER

Through 1990, the value of shipments of copper-base mill and foundry products will grow greater than historical rates. Some of the major growth will come in customary markets such as telephone and other communication applications, electric power generation and distribution, coinage, and residential construction.

Part of the growth potential from new construction will be offset by removal of building codes that inhibit the use of such competitive materials as aluminum and plastics.

Major new markets will include the community antenna television system (CATV), water desalinization, and the extensive development of rapid transit systems.

Rising demands

To meet this demand for copper, domestic production of refined copper will have to increase more than 2.5 times, or to more than 4,000,000 tons.

	Value of Shipments ($Bil.)		
Copper-base Mill and Foundry	*1960*	*1970*	*1990*
Products	$3.4	$7.0	$40.0

FROM GULF TO GLASS—*Taking a sparking drink from the Gulf of Mexico—fresh from the desalting plant shown in the background—Arthur Cohen, a Copper Development Association Inc., supervisor pauses, with glass aloft, in Freeport, Tex. The Freeport unit is a mini-version of what inevitably will become a national network of desalting plants capable of meeting the challenge of increased industrialization and centralization of the population.*

ELECTRONIC COMPONENTS

The continued advancement of the communications-electronics industries is closely coupled with technological achievements in electronic components. In general, these basic building blocks provide the foundation for new products.

Indications are that by 1990 nearly all electronic equipment will be solid state, eliminating many of today's discrete component industries. With the continued drive for large scale integration, the cost per circuit function could decline to one tenth of the present level.

The principal variables in the demand for electronic components are the consumer market, the commercial and industrial market, and the military market.

At present, the trend in the consumer market is toward imported products. For high technology components, the commercial and industrial market represents the most important growth area of the future.

The possibility of home video communication centers with computer terminals could be extremely important factors in bringing about significant long-term growth into the 90s.

With a continuation of present world conditions, the demand for electronic components for military application is expected to remain relatively constant.

MOON BEEF—*Frozen "sticks" of tasty roast beef destined to be eaten by moon-bound astronauts are cut into bite size cubes by Dr. R. L. Pavey, director of special foods research for Swift & Co. in his spotless space kitchen. New food products, including more premixed products, will be seen by 1990.*

	Value of Shipments ($Bil.)			
Electronic	*1960*	*1970*	*1980*	*1990*
Components	$2.9	$7.2	$8.5	$12.5

FOOD INDUSTRIES

Shipments of the food products industries are expected to reach $240 billion by 1990, or a 5 percent average annual growth rate from the 1970 level of $87.6 billion.

Continued steady growth in population, substantial gains in disposable personal income and improvement in income levels of low income families will boost growth in demand for food products.

The food industries will install more automated food processing and packaging equipment to meet the demand for portion-control products needed by the growing number of fast food carry-outs and for the catering operations of airline and institutional customers.

Food processors during the next 20 years will place increased emphasis on developing new and higher quality products, more nutritional products—high in protein; low in calories, and low in saturated fat products.

More premixed, fabricated convenience foods such as beef cubes, meat analogs, bacon-like bits, filled and imitation dairy products will be introduced.

	Sales ($Bil.)		
	1960	*1970*	*1990*
Foods	$57.2	$87.6	$240.0

INDUSTRIAL CHEMICALS

Industrial chemicals include most of the building block chemicals, both organic and inorganic, that are used either by the chemicals industry or other manufacturing industries in the production of other consumer products.

They include chlorine-alkali production from salt or brine, industrial gases used in metal production, food freezing, and medicine; inorganic pigments used in paints, coal tar intermediates, and crudes; basic organic chemicals produced from natural gas or from petroleum; and basic inorganic chemicals. Growth in shipments of these chemicals has tended to parallel the 7 percent growth in chemicals and allied products during the past two decades.

During the next two decades growth in this area will probably continue at about the same rate but will vary widely among the different product groups.

Organic chemicals, the precursors to many plastics products, pharmaceuticals, rubber processing materials, most pesticides, lubricating oil and grease additives and flavor and perfume materials, will continue to be the fastest growing sector of industrial chemicals. The chlor-alkali industry will show the slowest growth.

Industrial inorganic chemicals will show a slower growth rate than the rest, while industrial gases and inorganic pigments will increase at about 7 percent also.

	Value of Shipments ($Bil.)		
	1960	*1970*	*1990*
Industral Chemicals	$9.6	$17.4	$66.0

INSTRUMENTS

Population growth continues to be a catalyst in instituting comprehensive expansion programs designed to upgrade intricate industrial processes needed to achieve business goals. Among the more prevalent programs are those concerned with cleaner air and water, drug addiction, and those related to exploitation of vital natural resources.

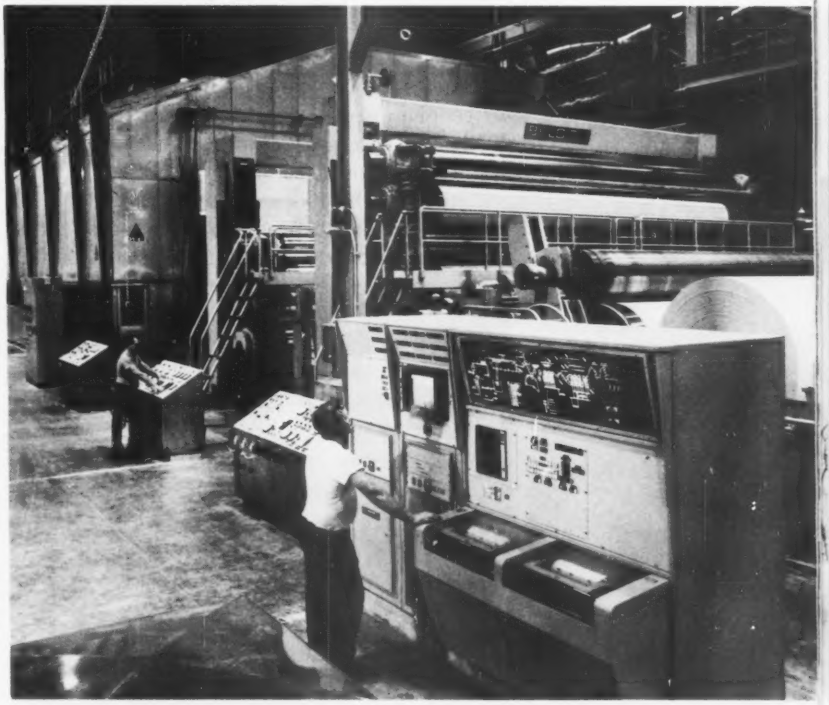
Demand for pollution abatement, drug control and resources management is foreseen until 1990, at least. Requirements for sophisticated instruments for pollution control and earth, space and ocean exploration, coupled with new applications of technology for socio-economic progress are leaders in instrumentation industry growth.

Automation is changing the character of industrial processes to ensure sizeable gains per unit of manpower and investment. It is expected to continue to press the instrument industry for technological advancements and better use of capital equipment.

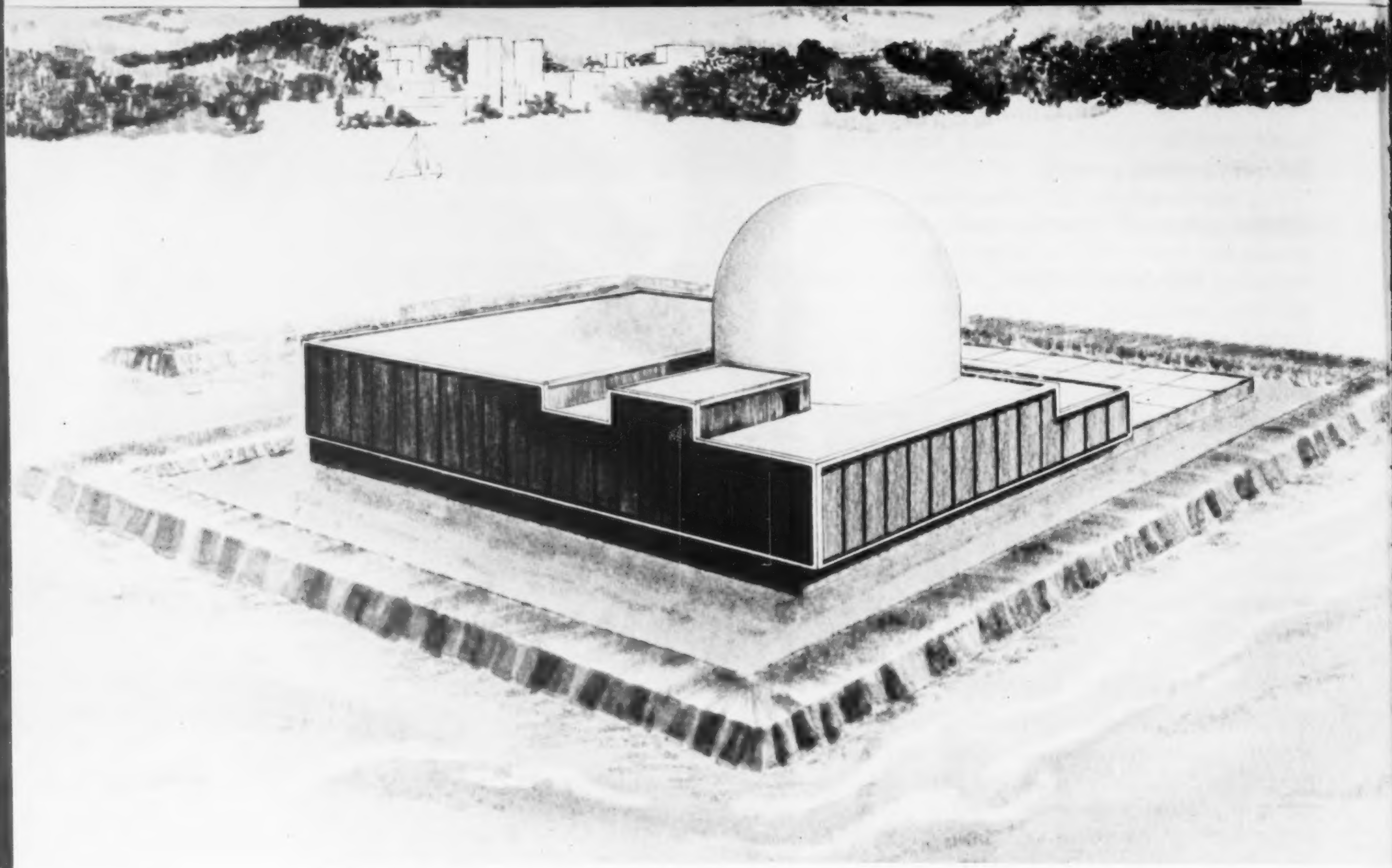
Automation in the laboratory will steadily reduce the cost of laboratory testing and the per unit cost of useful information. It is introducing sophisticated medical centers in response to the physician's need for an increasing volume and variety of tests. There will probably be a substantial increase in the amount of instrumentation, computers, and related equipment in the health center of tomorrow.

	Value of Shipments ($Bil.)		
	1960	*1970*	*1990*
Instruments	$2.9	$4.6	$17.5

LASER CUT SUITS—*Workmen watch patterns take shape as suits are cut by a new laser machine. Electronics equipment today will help revolutionize industries such as clothes manufacturing.*



PAPER MACHINE—*Operators control product quality with the help of nearly instantaneous information through highly sophisticated electronic equipment at International Paper Company's new Ticonderoga, N.Y., pulp and paper mill.*



NUCLEAR PLANT—*Artist's conception illustrates how the platform-mounted nuclear plant would be enclosed within a special protective breakwater two to three miles offshore. Westinghouse Electric Corp. and Tenneco plan to construct a $200 million facility to build platform-mounted nuclear plants.*

MACHINE TOOLS

Machine tools are used in the manufacture of thousands of items used in our daily lives. They are necessary for the economic growth and defense posture of our nation.

The machine tool industry is a cyclical industry, geared to prevailing economic conditions, and the requirements for investment in new production machinery by all metalworking industries.

The average annual growth rate for the machine tool industry during the period 1960-1970 was 6.8 percent, helped by strong activity the latter part of the 1960s due to inflationary pressures and defense build-up.

The application of computers to control the operations of machine tools in total manufacturing systems offers great promise for the future in metalworking.

The period 1973 through 1975 is anticipated to be an era of outstanding growth as this new technological development becomes more widely accepted. The period 1976 through 1990 will see greater refinement of the new technologies of the 70s and the availability of these developments to more companies as costs are reduced.

The machine tool industry can be expected to reach shipments of nearly $4 billion by 1990, subject to historical cyclical patterns, imports, the substitution of non-metallic materials for some traditional metal parts and the further development of several non-machine tool processes for the production of parts and components. An average annual growth rate of approximately 5 percent during the period 1976-1990 can be expected.

Value of Shipments
($Bil.)

	1960	*1970*	*1990*
Machine Tools	$0.8	$1.5	$3.7

NUCLEAR ENERGY

By 1990, nuclear energy will be the primary energy source for generating electric power in the U.S. Electric power demand will climb 7 to 8 percent each year through 1980 and then slow slightly on to 1990.

To supply this load growth, U.S. electric utilities must add more system capacity each year ranging upward to 48,000,000 kilowatts in 1980 and 75,000,000 kilowatts in 1990.

The annual expenditures required for this plant expansion program will climb every year from $13 billion in 1970 to $23 billion in 1980 and $36 billion by 1990. The total for these two decades is expected to reach about $450 billion.

Of the total additions now scheduled (approximately 200,000,000 kilowatts), nuclear energy comprises 35 percent.

It is estimated that by 1990 more than 55 percent of our electric power will come from nuclear energy. Nuclear energy is favored because of the uncertainty of fossil fuel supplies and cost, pollution control requirements and costs, as well as esthetic and economic considerations.

Installed Electric Generating Capacity (Million Kilowatts)

	1960	*1970*	*1990*
Nuclear Energy	0.2	7.0	550.0

PLASTICS MATERIALS AND RESINS

Plastics will continue to be a dynamic industry whose products pervade the entire economy. Although there will be considerable year-to-year variation, production of plastics materials and resins will increase through 1980 at rates generally better than growth in GNP.

Commodity resins, such as polyethylene, will continue to dominate production, but higher growth rates will be observed in engineering resins, manufactured for demanding end-use specifications. Continued development will be evident in production of high strength, temperature resistant materials and composite structures to replace metals.

As replacement for wood, the use of plastics in furniture will increase dramatically, and production of paper-like materials should be significant by 1980.

Much of the industry's production of materials is consumed in products discarded soon after use; biodegradable plastics for these applications will be readily available.

Because of the need to conserve resources, major developments in the re-cycling of plastics will begin by 1980. Thus, growth rates of initial production of these materials will begin to decline after 1980 to about the same level as GNP growth rates.

Value of Shipments ($Bil.)

	1960	*1970*	*1990*
Plastics materials and resins	$2.2	$4.1	$19.8

PRINTING AND PUBLISHING

Sensitive to the nation's needs for informational, cultural, and educational materials, U.S. printers and publishers are setting expansion goals for the future.

Although shipments of the industry have historically accounted for less than 3 percent of GNP, printing and publishing's total contribution extends far beyond this narrow measure. Concern for a safe environment involves many segments of the graphic arts and the employment of economical recovery processes, radical formulations of ink that contain no harmful solvents and unique drying operations are currently being tested throughout the industry.

These activities should lead the way towards solving a problem assigned high priority by printers and publishers. Health of the graphic arts industry depends on the continuing growth of a number of variables: population, personal income, state of the economy, enrollment and educational school attainment.

New forms of communication media, such as micropublishing, cable TV, and facsimile transmission are expected to have significant impact on printed and published products but the graphic arts industry is adaptive to change and should enter the last decade of this century in a position of strength.

Value of Shipments ($Bil.)

	1960	*1970*	*1990*
Printing & Publishing	$13.8	$26.7	$85.5

MODERN PLASTICS—*Floral designs add beauty to modern plastics uses in construction. Plastic material is one of three areas in which use of plastics will increase dramatically in the next century.*

PULP, PAPER AND BOARD

With the U.S. economy projected to continue at close to its traditional growth rate and with world demand for the industry's products projected to double by 1985, a favorable outlook for the U.S. pulp, paper and board industry seems assured for the 1970-1990 period.

The domestic pulp and paper industry will continue to be faced with the competitive challenges it has had in the past decade with new complications arising from heightened environmental concerns. Population growth will intensify the competition for fiber sources and introduce a new set of economic parameters governing the use of resources in the pulp and paper industry. Conservation measures now being employed should extend the resource base, however.

Research and development will continue to be directed toward new pulping processes to maximize yield and permit greater utilization of heretofore marginal fiber sources.

The next 20 years should be a period of rapid technical changes and shifting marketing strategies in the paper industry. Computerized control of the basic pulp and paper making processes will be standard. Radical new paper forming processes will seriously challenge the traditional fourdrinier method. Environmental considerations will affect product mix and competition from synthetic paper, now considered a high price novelty in the U.S. but finding wider acceptance in other countries, should become more evident here.

Markets will be expanded as the industry develops new products. The industry will become more concentrated and major paper companies will become more diversified.

Export sales can be expected to continue to rise, but the growth rate largely will be contingent upon Finland's and Sweden's market relationships to the European Common Market and on the impact of the USSR's development of its vast Siberian forest reserves.

	Value of Shipments ($Bil.)		
	1960	*1970*	*1990*
Pulp, Paper and Board	$6.5	$11.9	$27.6

NEW LABEL USES—*A sales person records a purchase with new NCR 280 retail system. With quick pass of "wand" reader over encoded price tag, the store captures detailed information required for its merchandise replenishment system without time-consuming entry into a cash register keyboard.*

RETAIL TRADE

Retail trade will reach $720 billion by 1980, and $1,364 billion by 1990. The impetus for retail growth will be generated by new households and higher median family incomes. The level of effective demand for consumer products will thus be raised by consumer need and affluence.

As the housing demands in the future are met, retailers will continue to add branch stores in suburban shopping centers to promote growth. Large climate controlled regional centers with multi-story development will be built with less frequency as land becomes more costly and scarce.

Much more retail building will take place in smaller community and neighborhood centers and, with urban renewal, some retail building will be concentrated in downtown areas.

As in the emerging markets of the 1970's, in the 1980-90 period retailers will have to market goods to specific consumer groups defined by age, income, and education.

This market fragmentation will increase product variety. Retailers will rely heavily on automation and computers for inventory control and buying guidance. They will offer and sell more services including rental, automotive, repair, insurance, and travel as consumer demand increases in this area.

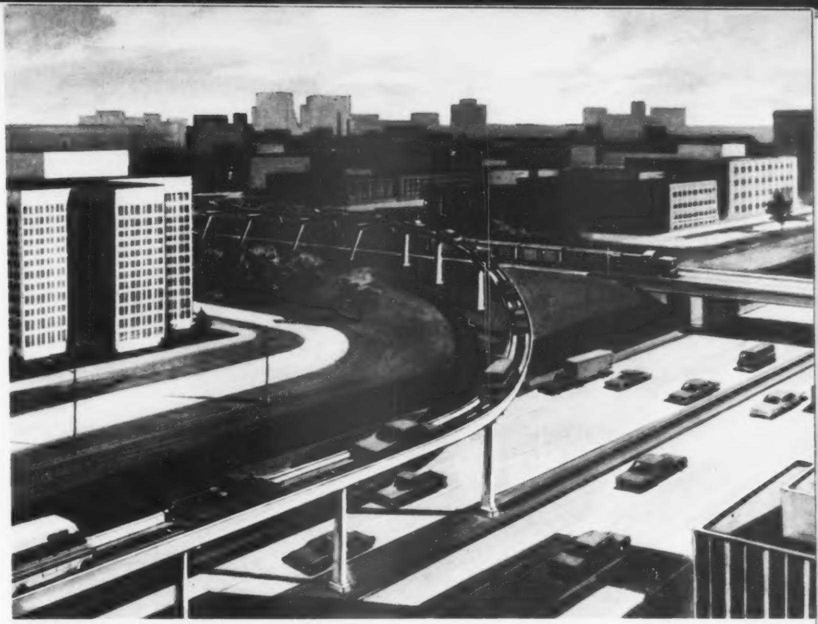
	Sales ($Bil.)		
Retail	*1960*	*1970*	*1990*
Trade	$219.5	$375.5	$1,364.3

SELECTED SERVICES

Selected services include hotels and motels; personal, business, and repair services; motion pictures; and amusements and recreation services. Receipts for these services are expected to be approximately $450 billion in 1990, reflecting average annual gains of 8.2 percent.

Projected growth for the selected services is higher than for the GNP because a population of rising affluence has increasingly sophisticated and specialized tastes and tends to purchase more services. Also, more leisure time, shorter workweeks, and better transportation systems will add to the demand for services. Most business services and some recreation services will exceed this growth rate.

The problem of lagging productivity in the service industries is likely to continue but be lessened somewhat in the coming two decades as automation becomes more widespread and technological developments increase at a more rapid rate.



GUIDEWAY PLAN—*A Dual-Mod guideway installation could look like this in a typical metropolitan area. The computer-controlled, automatically controlled roadway system, as conceived by Ford, could utilize air space over existing freeway medians.*

Employment in the selected services should continue to expand at a greater rate than employment in the rest of the economy.

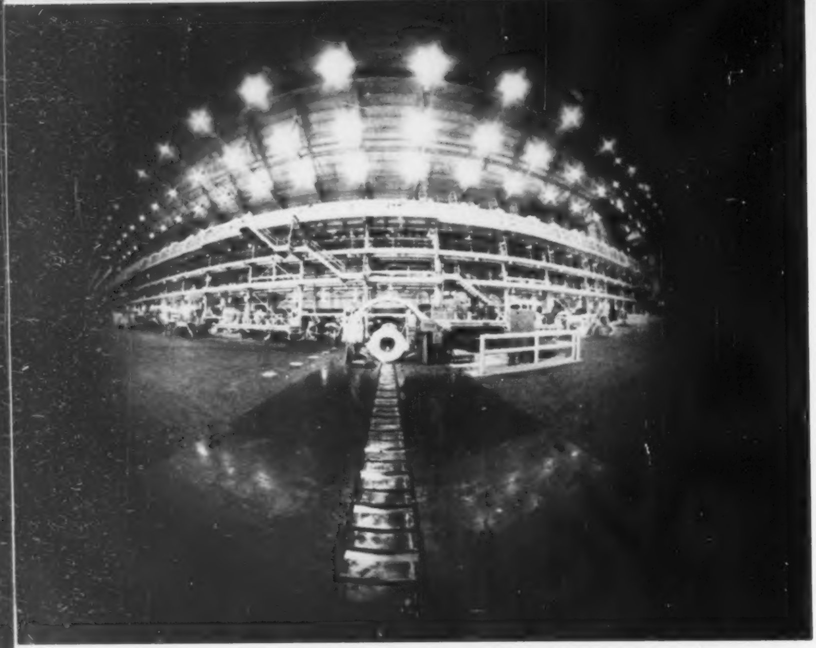
	Receipts ($Bil.)		
Selected	*1960*	*1970*	*1990*
Services	$44.6	$76.1	$450.0

SOFTWOOD LUMBER AND PLYWOOD

Production of softwood lumber and softwood plywood is expected to rise during the period 1970-1990 in response to growth in population and in the GNP. However, the rate of increase will be tempered by increasing competition from particleboard, hardboard and other wood-based panel products, as well as from non-wood construction materials.

A major concern of the lumber and plywood industries is the availability of timber. An adequate program to intensify management practices on both public and private lands will be needed to meet requirements for lumber for construction and industrial uses and, at the same time, provide for environmental protection, recreation and other increasing non-timber producing purposes.

The period 1970-1990 will be characterized by further integration of the forest products



SPACE-AGE STEEL MILL—*This space-age version of a galvanizing line is one of U.S. Steel's high speed "twin" galvanizing lines at Fairfield Works, Birmingham, Ala., and Fairless Works, Philadelphia, Pa.*

industries, which will promote more effective use and conservation of raw materials. Processing will be done in more fully automated facilities, with a resultant increase in productivity. Intensified research will produce improved products and create new products and markets.

Exports may increase moderately during the next two decades. The volume of exports will be determined in part by the strength of the domestic market. Imports of softwood lumber are likely to continue at the current high level.

	Value of Shipments ($Bil.)		
	1960	*1970*	*1990*
Softwood lumber and plywood	$1.9	$3.4	$5.4

STEEL

The population growth and economic expansion anticipated for the U.S. between now and 1990 will mean a growing market for steel. Opportunities for increasing sales include construction, improved transportation, and new machinery and equipment needed to produce increased quantities of consumer goods.

Demand for steel is expected to grow at a lower rate than the economy as a whole. Consumption of steel mill products in the U.S. is likely to increase by an average of about 3 percent per year to about 175 million tons in 1990.

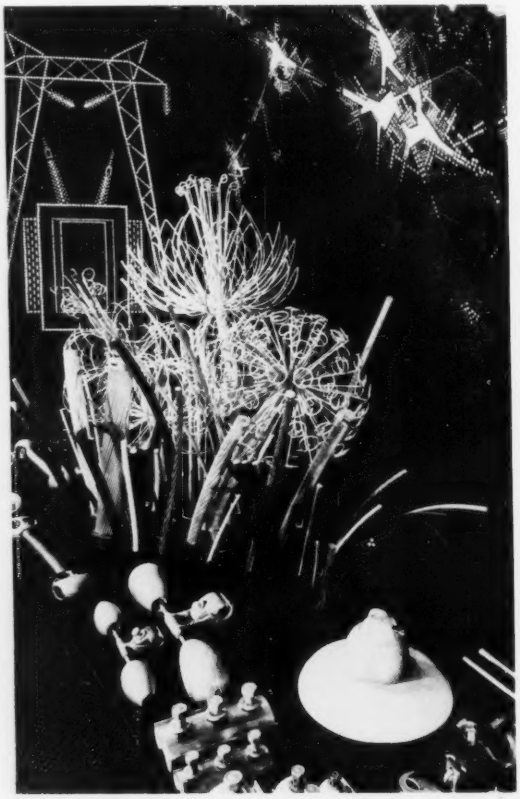
Imported steel has accounted for 10 to 17 percent of the U.S. steel market in recent years. Domestic production and shipments have grown at a rate lower than consumption.

Assuming some improvement is made in the competitive position of the domestic industry, U.S. shipments of steel mill products in 1990 could reach a value of $55 billion.

In the future the steel industry will continue to be subject to more severe cyclical fluctuations than the overall economy because of its heavy dependence on capital goods and equipment plans by industry. It will continue to be vulnerable to fluctuations in auto production and construction.

Foreign competition and competition from other materials will continue as problems for the industry.

	Value of Shipments ($Bil.)		
	1960	*1970*	*1990*
Steel	$12.3	$17.2	$55.0



ARTISTIC STEEL—*An array of items produced by the steel industry add an artistic touch to a futuristic picture. Demand for steel is expected to grow.*

WHOLESALE TRADE

Wholesaler sales will reach $474 billion by 1980, and $898 billion by 1990. Sales growth during this period will approximate 7 percent per year. Extensive commercial and residential construction expected through the 1970–90 era will benefit hardgoods wholesalers.

Wholesalers of consumer goods will benefit from two trends: Product proliferation will enlarge retail inventories. Because of the continued shift to a service economy where service utility is more important to the consumer than ownership of goods, secondary markets for consumer goods also will become more important. Wholesalers will continue to dominate regional and local markets, and there will be no major sales shifts in distribution channels at the wholesale level.

Large and medium sized wholesalers will gain an increased share of wholesale markets. Product-line specialty wholesalers will continue to be more important than general-line firms. Wholesalers will need increased amounts of capital expenditures for inventories and accounts receivable in both hard and soft good lines as customers require more wholesaler services.

Wholesalers will increase productivity through greater computer use and more warehouse automation. By the middle to late 1980s, semi-automated and, in a few lines, fully automated warehouses will be developed.

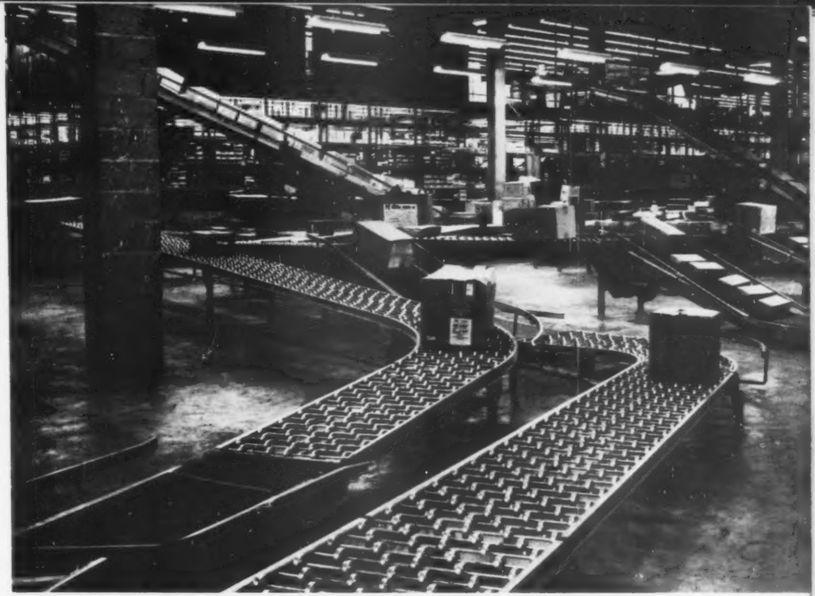
		Sales ($Bil.)	
	1960	*1970*	*1990*
Merchant Wholesalers	$139.9	$246.6	$898.5

DRUGS AND PHARMACEUTICALS

Drug industry shipments have risen substantially since 1960 and the prospects for continuing steady growth are promising. In the 7-year 1963–70 period, industry shipments rose at an average rate of 9 percent a year, outdistancing the advance in GNP.

Population growth, expanding private and government health care coverage, and rising personal disposable income will maintain this 9 percent growth through the 70s.

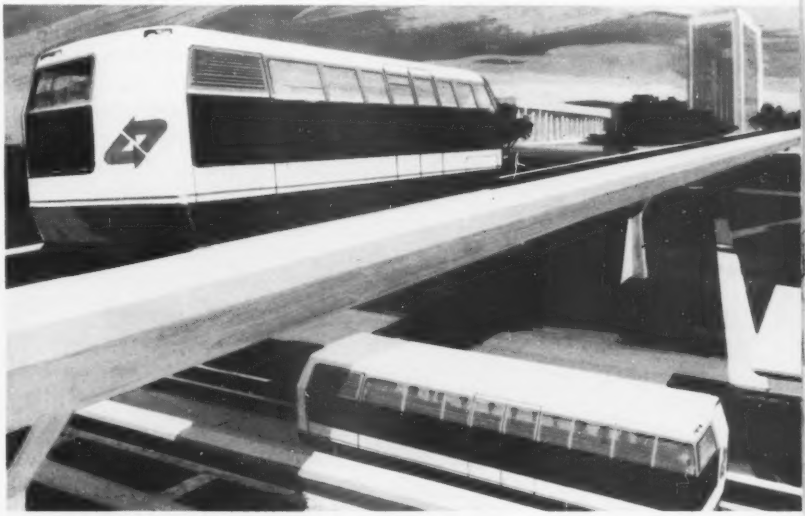
It is anticipated that by the end of this decade health protection will undergo marked improvement because of national health insurance coverage. Major scientific breakthroughs in the prevention and treatment of such degenerative diseases as cancer and cardiovascular disorders will bring industry shipments to peak levels.



AUTOMATED WAREHOUSES—*Modernistic conveyor belts carry almost all merchandise to destination for storeage in warehouses. Warehousing as a selective service will grow to meet demands.*

In the 80s, shipments will tend to rise at a less dramatic pace, although demographic factors such as expected increases in the aged population will continue to have a strong impact on industry growth. It is anticipated that shipments during the 80s will increase at an average annual rate of about 5 percent, reaching $26 billion in 1990—almost quadruple 1970 shipments of $6.8 billion.

		Value of Shipments ($Bil.)	
	1960	*1970*	*1990*
Drugs and Pharmaceuticals	$3.2	$6.8	$26.0



PEOPLE MOVERS—*An artist's conception of Ford's proposed Activity Center Transportation system shows electric-powered, driverless vehicles which would operate of speeds up to 30 miles per hour.*

Future Growth Needs Productivity Gains Through Innovation

Technology Assessment Must Be As Important To Business, Industry As Present Day R&D

If U.S. business and industry is to continue the sustained economic growth of this century 20 years from now, it must achieve further productivity gains through technological innovation and make technology assessment, the new art of prediction of beneficial and adverse consequences of technology, as integral a part of its activities as research and development.

This is the assessment of technology's role in the business and industrial community of the 1990s by Michael Michaelis, Washington office manager of the Arthur D. Little, Inc., research firm, in a paper prepared for the White House Conference on "The Industrial World Ahead."

These technological requirements are all the more urgent, says Michaelis, as business and government intensify their efforts to solve social problems. Only more rapid growth in the real gross national product can provide the resources for the large-scale social improvements to be achieved in the coming decades such as abolishing poverty, eliminating pollution, and urban renewal.

Other points made by Michaelis follow:

Increases in productivity will be particularly essential in the services sector of the national economy such as housing, transportation, health care, and education. These are the big users of resources and the main triggers of consumer dissatisfaction.

"The keys to creating and delivering new technology in this sector include: resources for innovation; scale of operation; accountability; accurate diagnosis of drags on productivity; aggregating the market and integrating it with providers of technology; increased entrepreneurial risk-taking; public cost-sharing in demonstrations and assessments justified by the social costs of low productivity."

Focus on new mechanisms

The nation's attention must be focused on new institutional mechanisms if technological innovation is to play the role expected for increased economic growth and social betterment. The Federal Government, recognizing this fact, has begun to create new institutional frameworks within the public sector and to stimulate parallel action in the private sector. A chief purpose is to muster strengths, resources, and know-how in a national commitment in such areas as energy, cancer, and housing.

"There is no question that technical innovation makes and shapes institutions. The automobile led to the national highway network and to the creation of large numbers of supply and service industries. Electronic inventions led to TV and a revolution in mores. The computer—information technology—presages a whole array of institutional changes and problems.

Agent for change

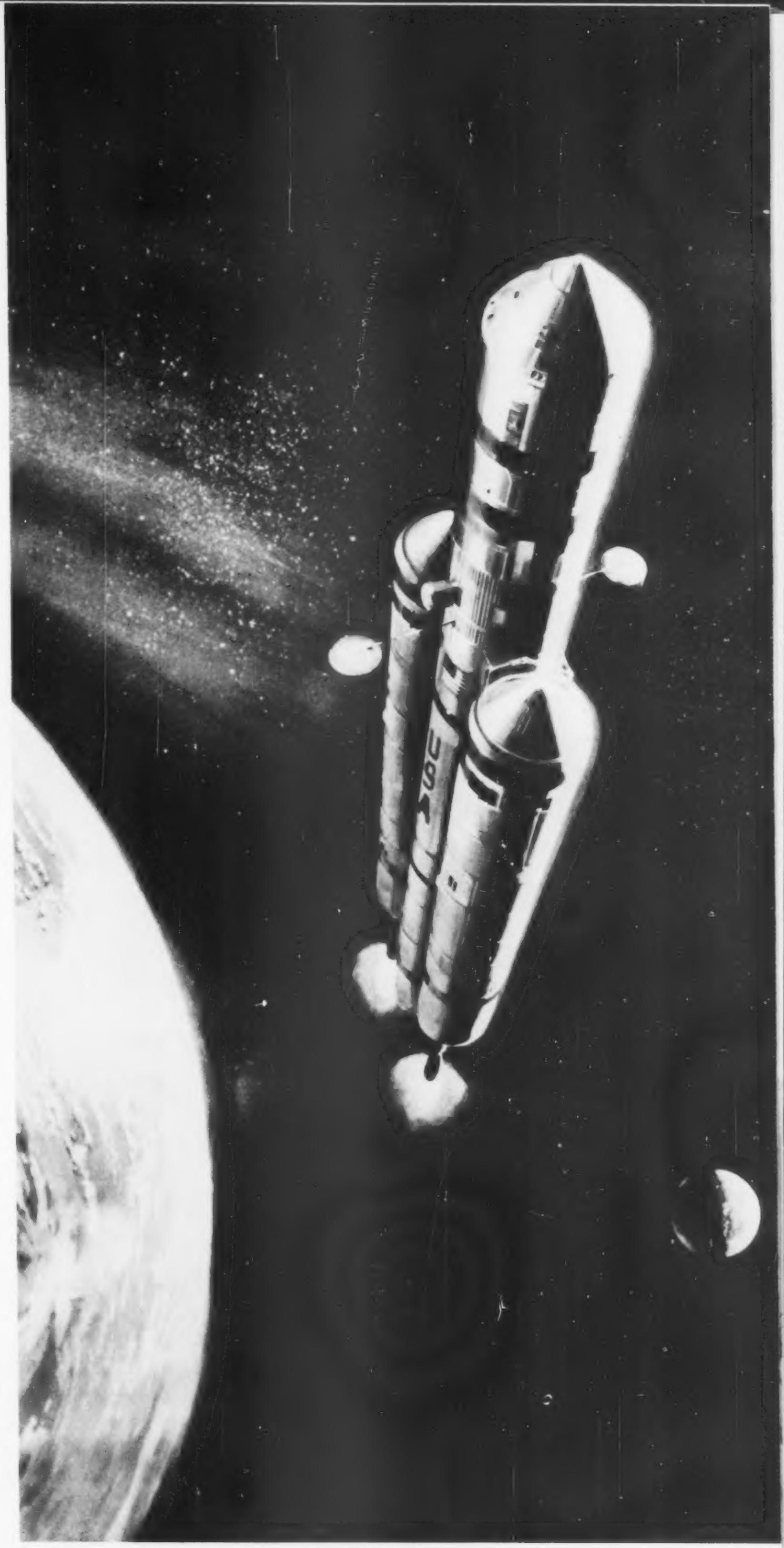
"Technology is indeed a singularly powerful agent for change. Yet, productivity of the functions served by technology have often not been maximized and social costs have been high. This has led to suggestions in recent years that assessment of the performance effects and goal of new technologies need to be made in order that responsible guidance—and accountability—can be exercised in the process of technological innovation. In short, the interaction of institutions and technology is a reciprocal, and not a one-way street."

Advanced technology has brought about space exploration, sophisticated defense systems, and nuclear energy. These major advances illustrate that technology need no longer be a limiting factor as it was 20 years ago. Whatever the nation's needs, technological innovation to meet specified goals can be attained. And the success of these high-technology enterprises rests largely on a special government-industry relationship in which government is the sole buyer of all the research and development and all the advanced equipment needed.

More innovative posture

"This aggregation of total market demand, and the relatively predictable behavior of the buyer, combine to create a risk-taking situation in which the supplier industry is induced to respond with a technologically much more innovative posture than most of its counterparts in the commercial, pluralist, consumer market."

The reverse is true in areas such as housing. Traditionally, at least until recently, housing has not had a government market



INNOVATION FOR MARS—*Advanced technology's role in space exploration proves that technological innovation can attain specified national goals. Having explored the moon, man now turns his attention to planetary exploration in the decades ahead. Artist's concept is a vehicle for a manned expedition to Mars.*

for its research and development and hardware. Its record of technological advance labors under restraints inhibiting such advance. Although there is technical knowledge to improve housing, the policies and practices of business, finance, government, and labor impede the use of this knowledge, a situation prevalent in many sectors of the economy.

The hoped for increasing rate of technological innovation will require a sound base of pure science research, in the social as well as the physical sciences. Although government may well remain a source of funding for basic research, the functional performance enterprise can be expected to devote considerably greater resources to it than product-oriented companies have done.

Socially relevant

The engineering professions will assume increasing responsibilities as matching total system performance to perceived social needs becomes the main objective. The scientist's role, as the guide to potential new advances, will become more socially relevant and can be seen as such in a beneficial way.

FUTURE POWER GENERATION—*Cleaner nuclear energy will probably begin to make an impact on power generation in the U. S. in the 1990s as technology moves ahead in this field. Here an engineering mechanics technician measures the mock core of fast-breeder reactor being developed at Hanford Engineering Development Laboratory, Richland, Wash., by Westinghouse Electric Corporation.*

Growing interest in the social responsibilities of business corporations will be a matter of everyday concern. The business of the corporation is the problems of the society. The corporation's stake in a good society is considered today as enlightened self-interest. It can become the primary goal to be achieved with profit.

The unexpected invention will have to be assessed for its usefulness to improve the whole system performance and its application will have to be programmed so as to effect a smooth transition. Constant smooth change is essential. Smoothness of transition is a prerequisite for productive social and technical innovation in tomorrow's world where the only constant will be change.

Demand for high-grade skills increases in an environment where innovation is imperative. Combinations of skills, creativity, and responsibility will mark the successful manager, engineer, and worker. Considerable flexibility of human, and therefore institutional, attitude is needed if the nation is to succeed in experimentation, a prime prerequisite for successful innovation.

Painful choices

Painful choices of priorities will have to be made in the next 20 years if the opinion of many economists is to be believed that the nation's productive performance (gross national product) will be insufficient to attain simultaneously the many social and economic goals implicit in the problems the nation faces.

"These predictions are based on the assumption that growth in productivity will not be greatly dissimilar to recent history."

U.S. business and industrial firms "have been, and will continue to be, primary vehicles for the development and application of new technologies. The postulated increasing rate of application of new technologies implies faster organizational and operational response by the organization intent on innovating. The American business firm is second to none—be it government or foreign competitors—in its ability, when so motivated, to effect rapid, inventive, structural transformation of itself without flying apart at the seams."

Four-Day Week: How Widespread By 1990?

Demand For More Leisure Time Makes Some Employees Willing To Work Longer Days

Whether it becomes a routine saying for the latter day five-o'clock-watcher—"Thank God it's Thursday!" (TGIT), or "Thank God *for* Thursday!" whether it is called "the rearranged workweek," "the modified workweek," or "four-forty," by any slogan or name, the four-day week is a growing phenomenon in America.

It is here in small measure. How fast and how far it will go, nobody knows and few would or could guess.

Reaction to the movement to date is mixed—from those who have tried it or have adopted it and from those who have not. It is inconclusive mainly because any trend to a workweek other than the five-day, 40 hour standard represents a significant change in both U.S. economic and social patterns, with added emphasis on that relatively new life style.

Secretary of Labor J. D. Hodgson, with Secretary of Commerce Maurice H. Stans co-chairman of the White House Conference on the Industrial World Ahead, said, "in these times of social upheaval it was perhaps inevitable that our basic patterns of work and leisure should come up for review."

"Today there is no question that they have," Secretary Hodgson added. "Witness the sudden surge of interest in compressing our customary five-day, 40-hour workweek into four days by lengthening the average day's work to 10 hours . . .

J. D. Hodgson
Secretary of Labor

TIME FOR SAILBOATS—*More sailboats may dot the seascapes of the 1990s as workers get more leisure time. Sailboats such as this one pictured in San Diego, already are a favorite weekend pastime.*

"We see this as a willingness of some workers to put in longer days on the job in order to have larger blocks of leisure time available. In some measure it reflects the experience of the Federal Government 25 years ago when government workers eagerly accepted a lengthening of their hours of work from 39 to 40 to be able to reduce the number of days at work from six to five.

High prize

"Leisure is something the American worker has always prized highly and striven to attain. There is no doubt that he's been successful in his struggle. In the past century, for example, reduction of the average workweek by about 13 hours netted the American worker 675 hours of free time annually. Added to increased vacation time and more paid holidays, this amounted to a total gain in time free of work of nearly 800 hours annually or roughly one month out of 12.

"During the past decade alone, the average American worker gained about 50 hours a year in free time—15 hours in additional vacation time, four hours in additional holiday time, and the balance in reduced working hours.

"The recent growth in the number of vacation weeks has been spectacular. The hue and cry now is not for a further reduction in working hours—which would affect the worker's pocketbook—but for more usable leisure.

"It is possible that the nation will answer that cry in the current decade through some rearrangement of free time to provide larger blocks of leisure. It may come from restructuring the present workweek or from additional weekend holidays or perhaps longer vacations.

"Through rescheduling of existing holidays, most of American buiness and industry is already on a four-day week for 10 percent of the year.

Additional holidays

"It is easy to envision additional Monday holidays over a period of time, possibly to a point where each month would offer a 3-day weekend. This would not require a comprehensive reformation of our working life, but would provide a way to gain additional leisure in available block form without seriously disrupting present working and living patterns."

Economist Paul A. Samuelson calls the four-day week a "social invention." In this category he also includes double-entry bookkeeping, which he notes "may have done as much for the standard of modern life as the development of smelting (a *technical* invention)."

Samuelson contributed the Foreword for "4 days, 40 hours," a book published in 1970 and edited by Riva Poor, reporting on the movement in general and detailing the experiences of 27 companies which adopted the 4-40 week.

The opportunity to choose one's own work routine, Samuelson writes, "is not the only important aspect of the four-day week.

"To the historian of long trends in economic development, it is merely one facet in the steady sweep toward greater leisure and less lifetime toil in a society growing more affluent. With it must be lumped the already shorter five-day week, the longer period of retirement, the prolongation of years of formal education and the trend toward more holidays and longer vacations . . ."

Mrs. Poor, who reports "news about four days, 40 hours and other arrangements for increased productivity" in the monthly *Poor's Workweek Letter* (published in Cambridge, Mass.), has termed the movement "a revolution in work and leisure."

The U.S. Department of Commerce's Bureau of Domestic Commerce, in studies of the rearranged workweek and other developments in industrial relations, found that description "revolution" perhaps too strong for a movement that, it says, thus far "encompasses only one-tenth of one percent of the American work force."

Taking shape

However, the rate of growth in numbers of firms and institutions switching to four-day weeks, the widening publicity base, increasingly favorable feedback from four-day workweek experiences, proliferation of industry study groups on rearranged hours of work, and increasing governmental interest in monitoring and attempting to predict the rearranged workweek movement—all of these indicate that something profound may be taking shape in the American labor force.

Janice Neipert Hedges, a Bureau of Labor Statistics economist, said:

"The four-day workweek has caught the imagination of the public. It has intrigued management and is winning guarded support from labor organizations. But the big question is unanswered: Is a breakthrough from a five-day to a four-day week imminent? The current standard is not immutable. But neither is a shift to some new standard inevitable."

About four-fifths of the 14 million plant workers surveyed by the Bureau of Labor Statistics in 1969-70 were on a 40-hour schedule and nine-tenths of the total were on a five-day week. These figures are the historical results Mrs. Hedges says, of "a long term trend in practice and in law toward an eight-hour day and the Fair Labor Standards Act of 1938 (effective in 1940), which fixed the 40-hour weekly standard for workers in firms engaged in interstate commerce.

Thus, although the Federal Government adopted the eight-hour day for its employees in 1868, the five-day, 40-hour workweek did not become general in industry until 30 years ago.

In the 1870s the average workweek in the United States was about 53 hours. Today the average is close to 40 hours—about 13 hours less than a century ago.

The four-day, 40-hour concept is nearly 30 years old but was virtually unknown and little used until two or three years ago.

At latest count some 700 firms with 130,000 employees offered some form of the four-day week for at least part of their work force and for at least some weeks of the year. The variations range from 10-hour days to nine hours or less and include 4.5, 3.5 and some three-day weeks.

SAN DIEGO SURFING—*The four-day work week has captured the imagination of the American public, including this recreation-minded surfer. Its adoption should be widespread by the 1990s, leaving more time for water sports. Less than one percent of today's work force has a rearranged work week.*

Most of the firms and institutions (including units of municipal government in Atlanta, Ga., and Long Beach, Calif.) which have been experimenting with the four-day week are within the 100-500 employee range. Most are on the Eastern seaboard and in the Central states.

Majority nonunion

Generally they are nonunion, although some have contracts with small unions or locals of large national unions. Few of the firms are capital-intensive, few compete in world markets.

"Moreover," Mrs. Hedges noted, "in numerous instances, the four-day week is on trial with both workers and management, and in more than a dozen firms (as of October 1971) it has been tried and discontinued."

Poor's Workweek Letter estimated that as of January 1972, on the average, about five U.S. firms were converting daily to the four-day workweek (up from two conversions a day in July 1971). If the movement continued to expand at that rate, the number of firms and employees on a rearranged workweek would soon comprise a significant segment of the American labor force.

Among the 700 firms currently experimenting with a rearranged workweek, *Poor's Workweek Letter* reported the following national distribution by time zones.

Pacific	*Mountain*
18.0 percent	5.1 percent
Central	*Eastern*
23.8 percent	53.1 percent

Eleven states have two-thirds of all the four-day firms. The percentage distribution by state is as follows:

Massachusetts	14.6
California	12.1
North Carolina	6.6
New York	5.9
Oregon	4.8
Michigan	4.4
Texas	4.0
New Jersey	3.7
Pennsylvania	3.7
Indiana	3.7
Florida	3.7
All other states	32.8

This shows that the pattern of distribution of firms on rearranged working schedules roughly follows the national distribution of industry. Yet, the typical segment of any one state converting to a 4-day week is not necessarily industrial or manufacturing.

For example, although most conversions in North Carolina are among small manufacturing establishments, in Massachusetts most are service firms (data processing, management consultants, custom-house brokers, insurance, etc.). Likewise, California's large participation in the four-day week includes a large number of insurance agencies.

Manufacturing

Nationally the majority of four-day firms are engaged in manufacturing. Most are small operations where jobs are characteristically low-wage, routinized, repetitive production line type jobs requiring relatively low skill levels.

For example, four-day firms in North Carolina, a state where most of the four-day firms are engaged in manufacturing operations, produce this array of products: knit fabrics, work clothes, printing, book binders, shirts, home repair products, fiberglass boat parts, industrial containers, summer furniture, cutting tools, and lumber and chips.

With the exception of printing operations requiring higher than average skill levels, typical work adheres to the low-wage, low-skill level, routine production line pattern. Accompanying low-wage, repetitive work situations are the problems endemic to low levels of worker motivation—absenteeism, tardiness, high turnover, and numerous other problems resulting from low worker morale.

Many four-day manufacturing firms are reportedly operating in a competitive labor market where a four-day schedule, offered as a unique fringe benefit, could put a firm in a strong recruiting position. For example, the Samsonite furniture plant in Murfreesboro, Tennessee, switched to a four-day operation and realized a decided competitive labor market advantage relative to other plants in the area.

Law enforcement

Several small police departments in California operate on the four-day week and the third district of the Washington, D.C., Police Department worked on an experimental four-day, 40-hour week for the last six months of 1971. The Washington force is the largest police department to experiment with a four-day schedule of 10 hours, on a three-shift basis to provide double coverage during the high crime hours running from 8:00 p.m. to 1:30 a.m.

Similar plans have been adopted by more than 50 other police departments across the country.

Insurance agencies and banks

Insurance firms and banks are switching to a four-day, 10-hour schedule for two reasons—to increase employee morale and to provide better customer service by staying open more hours per day.

A significant advantage gained is the critical two hours extra per day available to serve customers who work standard eight-hour days. While banks are still studying the plan with some caution, several of the larger insurance companies are already experimenting with the new schedule for certain operations.

United Services Automobile Association (USAA) of San Antonio, Tex., an insurer of active and former military officers, is the largest company to date (3,000 employees) to convert entirely to a trial rearranged workweek. USAA works four 9.5 hour days Monday through Thursday with 200 employees assigned a Tuesday-through-Friday shift.

John Hancock Mutual Life Insurance Co. in Boston has placed 300 of its 6,000 employees on a short week and the smaller Preferred Risk Mutual Insurance Co. of Des Moines has its entire staff of 500 on a four-day schedule. Equitable Life Assurance, Mutual of New York, and Metropolitan Life are all experimenting with some rearrangement of the workweek.

Hospitals

Hospitals and clinics are another continuous coverage service group experimenting with incorporating longer working days and shorter workweeks.

Roger Williams General Hospital in Providence, Rhode Island, pioneered in the area of four-day, 10-hour day scheduling in an attempt to solve chronic problems of turnover, recruiting, and uneven coverage by its professional nursing staff, especially on weekends.

On a four-day schedule since October 1969, the hospital reports increases in morale, better quality and coverage of professional nursing care and a surprising decrease in total annual payroll costs even with overtime paid for the two hours worked in excess of eight.

Architects and engineers

Within the construction industry, architects and engineers are the primary champions of the four-day week.

Ellerbe Architects and Engineers of St. Paul have their five offices on a four-day, 36-hour week while the 400 professional staff members of architects Haines, Lundberg and Waehler of New York work a four-day, 34-hour week.

A large percentage of west coast architect-engineering firms have either adopted or are experimenting with a four-day week and two such firms are willing to predict that 1975 will see most architectural and engineering firms on a four-day schedule.

Services

The majority of service establishments operating on the four-day week fall into one of four categories: law enforcement, hospitals, insurance and banking, and architectural and engineering.

At the Norfolk, Va., Naval Air Station, a 363-man aircraft maintenance department is experimenting with a four-day week.

Knox Reeves Advertising Agency of Minneapolis, Minn., works on a four-day schedule during July of each year and reports increased efficiency and productivity. The municipal government of Atlanta, Ga., has 154 of the city's 7,500 employees on a four-day week.

SNOWMOBILING—*At Skawheykin, Maine, this outdoor sportsman spends his leisure time on a snowmobile. The four-day, 10-hour schedule which is increasing in popularity in the U.S., because it boosts employee moral and provides better service.*

FOR HIKING IN MOUNTAINS—*Working four days allows more time for enjoying breathtaking mountain scenery. These hikers pause to view Dewey Point at Yosemite National Park in California.*

What are the pros and cons of the four-day proposal? What are the primary economic issues? What would general adoption of a four-day, 40-hour week mean to the average businessman?

Among key issues are productivity, employment, overtime, moonlighting, legal and institutional structures, and labor-management relations.

Important factors

"Obviously," said Secretary Hodgson, "the type of business in which one is engaged, the availability of labor and the most beneficial utilization of expensive machinery and equipment are important factors in the consideration of any rearrangement of working hours.

"As far as the payment of overtime is concerned," he noted, "those employers now covered under the overtime provisions of the Fair Labor Standards Act would not be affected. That law, which applies to 40 million working men and women, simply requires the payment of overtime for time worked beyond 40 hours in a given workweek. It does not specify the number of hours per day."

However, he noted that the Walsh-Healey Public Contracts Act, which applies to 1.7 million employees of Federal contractors, contains a mandatory ceiling of eight hours in a day; and employers subject to provisions of the Contract Work Hours and Safety Standards Act, which applies to about 2 million workers, generally are required to pay time and a half for all hours worked in excess of eight in any calendar day.

"There are other considerations for the businessman," the Secretary adds. "For example, certain state laws presently prohibit the employment of women for more than eight or nine hours in a given day. And, under present law, Federal, state, county and municipal governments are required to pay overtime to non-supervisory employees for hours worked beyond eight in one day. Thus, a four-day, 40-hour week would increase the pay of the 8 million affected workers by 10 percent—a heavy additional burden for the taxpayer.

Deeper probing

"Although it wants to respond to the wishes of the American worker and his employer, the Department of Labor would certainly want to probe more deeply into many questions before taking any action or recommending legislation to the Congress pertaining to the extended workday.

"High among our concerns," he said, "is whether possible increased fatigue resulting from the longer workday might adversely affect employee health and safety. . . .

(The Labor Department conducted a hearing on possible Walsh-Healey amendments in September 1971.)

"We also need to know more about what effect a restructured workweek might have upon moonlighting—in which one out of five working Americans now participate—and upon the labor supply from the working mother group."

A Gallup poll last year indicated that while a high proportion of men, particularly younger men, prefer the four-day, 40-hour workweek, women are opposed. Apparently working wives who responded in that survey had had enough trouble getting the children off to school and dinner on the table while working an eight-hour day.

As for productivity, there are both pro and con arguments. Against those employers who report such benefits as increased morale, reduced absenteeism, ease of recruitment, and fewer startups are those who, again in Secretary Hodgson's words, "foresee almost insuperable obstacles related to multi-shift operation needs and other production requirements."

He adds, "many union leaders and others regard the 10-hour day as retrogressive and are less charmed with the prospect of rear-ranging the current 40 hours in the workweek than with reducing their total."

Overtime requirements for hours worked in excess of eight per day are not necessarily deterrents to the rearranged workweek movement. The majority of firms on such schedules now work less than 40 hours a week. A four-day, 38-hour week is more popular, with 9.5-hour days contributing to a total of 38 worked and 41 hours paid.

Manufacturing industries now average 3 hours of overtime per week. A switch to a four-day, 38-hour week with overtime pay, therefore, would not represent a prohibitive increase in labor cost. This is especially significant if other cost savings of the four-day week materialize.

Organized labor's view

The AFL-CIO Executive Council stated its position on the issue last August. It went on record in favor of reduced working hours and rearranged workweeks of benefit to both unions and management but restated its firm opposition to dropping overtime requirements from Labor contracts, Walsh-Healey, or elsewhere.

Among advocates of the four-day week—with overtime pay—are I. W. Abel, president of the United Steelworkers of America and Douglas Fraser, vice president of the United Auto Workers. Both see a four-day week as a major bargaining point in contract settlements over the next few years.

A four-day week study group was established at Chrysler Corporation as part of the 1970 UAW contract but was recently disbanded when Chrysler insisted that any four-day pilot project would disrupt the flow of materials between plants.

Management

The four-day workweek movement is basically a management-inspired phenomenon. Yet many managers of the larger corporations take a dim view of the proposal.

Dun's last year polled the 300 corporate presidents and chairmen who make up the magazine's President's Panel. While the majority agreed that some kind of shortened workweek is the wave of the future for Americans, their overwhelming warning to industry is to go slow.

Industry's big worry is productivity, *Dun's* found. Proponents of the four-day week have said that one of its major benefits is to cut down absenteeism and improve output.

But most of the executives in *Dun's* survey expressed the belief that increased productivity would be exceedingly difficult to obtain under a shortened workweek. A number of panelists felt a 10-hour day could actually decrease productivity because of fatigue.

Customer concern

Another concern of the President's Panel was customer relations: a company that goes to a shorter week may find that many of its customers are still working and expecting service on Friday.

Executives of the larger corporations also saw a weakening in U.S. competitive posture in world trade by a movement from which the major benefit to employees was more opportunity to moonlight.

Reports from managements which have tried the four-day week tell a different story. Among them the consensus is highly favorable, with most managers ready to give unqualified endorsement to the four-day week. Personnel officers at the United Services Automobile Association, for example, say the company has been "pleasantly surprised" with the results of its four-day experiment and feel that USAA "will show a fairly significant increase in productivity by the end of the 90-day test."

While a reduction of hours of labor in itself is nothing new, a four-day week is an audacious break with tradition. It reflects

FOR MORE TROUT FISHING—*In the Colorado Rockies this trout fishermen relaxes on the banks of a peaceful mountain stream. More fishermen will be outdoors more often with a shorter workweek.*

an impatience to arrive at the three-day weekend prior to the day, perhaps a few decades hence, when productivity will have increased and the economy advanced to the era of the 32-hour workweek.

Longer workday

The price of satisfying that impatience is a longer workday. If the pattern becomes four 9- or 9.5-hour days, rather than 10, the four-day week may not be far off for a majority of Americans. When it will arrive in any particular segment of the workforce will depend on three criteria—productivity; interface with suppliers, clients and the economy at large; and contracts and statutes.

Long-run productivity gains stemming from technological advancement and other factors are seen as the largest single factor in determining how soon the economy can sustain an abbreviated workweek significantly shorter than 40 hours.

Loss of interface with the rest of business and the public at large through a fifth-day (Friday) shutdown is a major factor retarding acceptance of the four-day week by large corporations.

Contracts and statutes are now focused on exacting overtime clauses for hours in excess of eight per day. Four-day weeks will commonly be workweeks of 38 hours or less. Experience has shown that four-day, 38-hour workweeks result in cost savings regardless of overtime requirements.

Perhaps the most viable perspective on the four-day week is to interpret the movement as a manifestation of three labor trends: shortening of weekly hours of labor, expanding preference for blocks of leisure time, and greater flexibility in scheduling the hours of labor designed to fit the technological requirements of American industry.

Usable time

The most salient of these appears to be a desire by today's working man and woman for more *usable* leisure.

Secretary Hodgson sums it up this way, "Whether they will want to take additional productivity gains in more leisure rather than greater real earnings is an open question. We would guess that in the future, as in the past, they will want some of each. It is the respective proportions that are unpredictable. These are difficult times for prognostications, and it may indeed be that we are moving toward the point where we would prefer more leisure to more lucre. It is a fascinating question."

—Bureau of Domestic Commerce

TAKING THE SLOPES—*Weekend skiers, whose numbers are increasing dramatically in the 70s, could benefit more than other sportsmen by the four-day work week. Skiers pictured here at Sun Valley, Idaho.*

GOLFING AT SUN VALLEY—*The golfing buff who simply can't find enough hours for the golf course would find the rearranged work week an ideal fit into his golfing schedule with more leisure time.*

Merchant Marine, 1990: Bigger, Faster Ships To Carry Four Times More

Petroleum Shipments To Lead Trade Surge, Making 250,000-Ton Tankers Commonplace

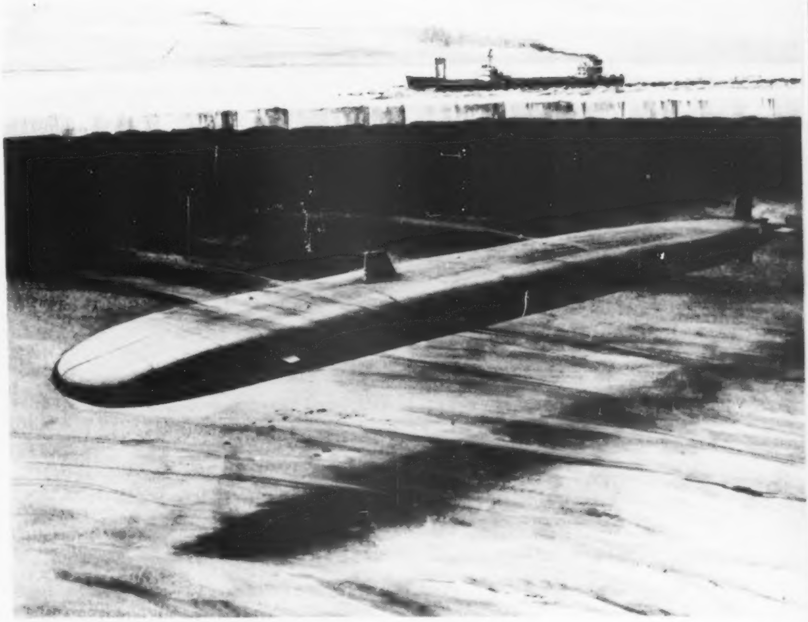
Continuing economic growth and consequent expansion of international trade will exert great pressures on marine transportation in the years ahead.

Changes by 1990

All of the changes likely to be seen in ocean shipping by 1990—new types of bigger, faster ships, improved methods of handling cargo, and more efficient ways of building ships—will all result from the shipping industry's efforts to match its productivity with the volume of trade it must carry and the services required by shippers.

For the United States alone, according to Maritime Administration forecasts, oceanborne foreign trade will increase nearly four times in the next 20 years—from today's approximately 473 million tons annually to 1.8 billion tons a year in 1990. Similar growth will occur in trade between other nations.

Much of the growth in U.S. trade will come in bulk commodities, the raw materials needed to meet the Nation's energy needs and requirements for industrial products. This trade is expected to account for 1.5 of the 1.8 billion tons moving in 1990. Petroleum and oil products, iron ore, and similar materials fall into this category.



SUBMARINE TANKER—*A nuclear-powered submarine tanker, designed by General Dynamics, calls for a vessel 900 feet long, largest ever built. Displacing over a quarter million tons when fully loaded, the submarine would traverse the Northwest Passage or the Arctic Ocean under the ice.*

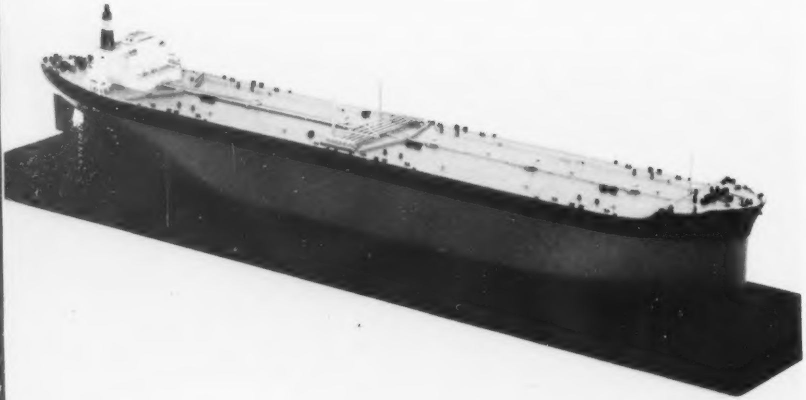
Assistant Secretary of Commerce for Maritime Affairs A. E. Gibson points out: "U.S. energy requirements are expected to increase over 100 percent in the next 20 years to the equivalent of about 32 million barrels of oil a day.

"Petroleum will account for some 40 percent of this total; and, with the forecasted drop in domestic oil production, most of this requirement will have to be met with foreign petroleum, primarily from the Eastern Hemisphere."

Imports from the area, he adds, are anticipated to increase over five fold by 1990 from less than 3 million barrels per day now to about 18 million barrels per day.

Coupling the increase in demand with the long distances involved in getting the oil, for example, from the Persian Gulf to the United States will result in an unprecedented demand for tanker tonnage.

"The only way we can meet this requirement is to use large tankers, in excess of 250,000 tons," the Commerce Department official explains. He looks for these ships to be an increasingly common sight in U.S. foreign trade by 1990.



BULK CARRIERS—*Carriers of more than 200,000 deadweight tons—such as this recently designed 265,000-ton tanker—will form the backbone of the world's raw materials-carrying fleet.*

By then, these ships will form the backbone of the world tanker fleet. They will be the rule rather than the exception. Gibson foresees that smaller tankers will be used only for feeder services from the regional ports used by the supertankers to smaller ports along the coastline.

Small tankers replacement

"I would not be surprised," he adds, "to see these small tankers replaced by more economical tug-barge combinations well before 1990. By then, the present technology in linking tugs and giant barges together in the ocean environment will have advanced to the point where the economic advantages of this type of operation will make themselves fully felt."

He explains that the primary advantages of tugs and barges over conventional single-unit ships are several: First, the power plant—the tug—can be kept in almost continuous operation eliminating the costly port time encountered by normal ships. Second, they generally operate with smaller crews, lowering their operating costs. Third, the construction costs of two barge combinations are substantially less than equivalent conventional ships.

"As the years progress, these advantages will appear greater and greater to ship operators," he predicted.

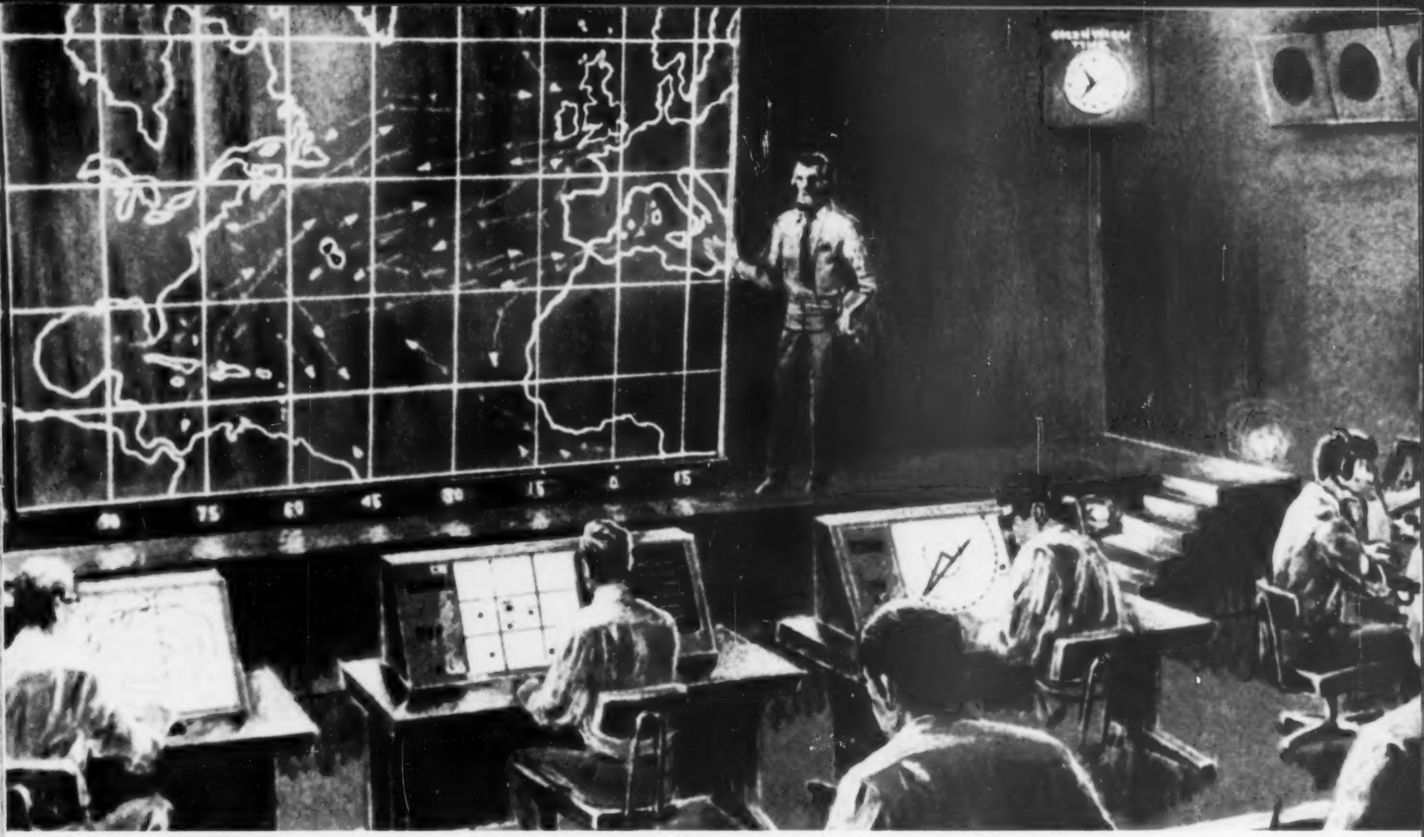
Discussing the terminals for the supertankers, which will be able to carry over 60 million gallons every voyage each, Gibson points out that their construction is imminent.

"The energy crisis will be upon us in the next few years and we have to plan to meet it as soon as possible, particularly in the populous Eastern corridor along the North Atlantic.

"Since dredging existing ports is not economically feasible, a new deepwater terminal that can safely accommodate ships with drafts of more than 65 feet will have to be built," Gibson added.

He explains that by 1990, the deepwater terminal will probably have evolved into a more sophisticated entity, capable of furnishing othe useful services.

"It would be very simple to add facilities for handling dry bulk cargoes, such as iron ore," he says. "More importantly, other services which people find objectionable—such as sewage-treatment plants and major jet ports—economically be located at sea on a deepwater terminal island.



MONITOR WORLD TRAFFIC—*A worldwide computerized traffic system will follow the flow of ships around the globe. The electronic monitoring system shows the destination and position of each vessel.*

Dry bulk commodity shipping, also, will undergo significant changes in the years ahead. Gibson points out that slurrying—a technique whereby iron ore is suspended in water to be pumped aboard and off ships—is being used today in connection with an offshore terminal in Australia. He expects that this technique will be extended to other commodities, such as coal, to decrease the time and cost of transferring these cargoes from ship to shore, and from shore to ship.

Gibson pointed out that bulk carriers, generally, will become more versatile. He noted that ships designed to alternately carry iron ore, coal, and other dry bulk commodities, and petroleum are in increasingly common use today.

"I would not be surprised at all to find additional capabilities being added to these ships—such as the ability to carry slurries, which are now carried in specially equipped vessels," he says.

Gibson raises the possibility, also, that new types of bulk carriers may come into operation by 1990. One possibility is submarine tankers. "The technology for these ships exists today. The big obstacle is one of economics—these ships are tremendously expensive to build and the crews have to be very highly trained. However, if more large oil deposits, like the North Slope fields, are found around the Arctic Ocean, it may well become economically attractive to transport crude oil this way."

Some of the more drastic changes, Gibson theorizes, will take place in the general cargo, or package freight, trades. "Ships in these services, which handle just about every commodity you can name in less-than-shipload lots, will be coming under immense competitive pressure in the years ahead."

Jet competition

"Jet-powered cargo aircraft, once the new generation of massive jets are in full service, will compete for the very high-valued cargoes, such as electronic equipment and computers. At the other end of the scale, there is a growing tendency to ship low-valued liner cargoes in shipload lots, thereby achieving greater economies of scale."

Gibson feels that this pressure will lead to the development of new types of ships that can offer express services that will compete with airlines.

Gibson believes that the ships in 1990—compared to those today—will be vastly different in terms of their internal make-up. Navigation and communications equipment and power plants on the ships of the future will incorporate many of today's technology research studies as actualities.

Larger ships

"As ships get larger and faster," he explains, "they will need higher horsepower propulsion systems. And with continued increases in the price of fuel oil, shipowners will begin to look to other sources to power their ships."

Possibly the most important of these alternatives is nuclear power. "We know today that nuclear propulsion is technically and operationally feasible. The big question remaining is one of economics. At what point do the fuel savings brought about by a changeover to nuclear power outweigh the increased investment required?"

"By 1990, I have no doubt that this tradeoff point will have been reached and that there will be quite a few nuclear ships operating on regular runs, compared to the handful of experimental ones now in existence," he affirms.

Additionally, gas-turbine propulsion will be commonly found in use aboard ships in 1990. This type of propulsion will be used by ships in the power ranges just below those using nuclear. Tomorrow's use of this type of power contrasts with today with only a few gas-turbine powered ships in operation.

Shipowner reassessment

"Basically, what is going to happen between now and 1990," Gibson sums up his argument, "is that shipowners—pressed by shippers for better and more economical service—are going to have to reassess just about every ingredient in their ships to find the most economical way to build and operate them. Nobody will be able to accept power plants or ship arrangements, for example, as given. The decisions made in these areas will have to be very, very carefully researched."

Gibson also foresees greater use of computers being made in shipboard applications. Satellite-computer navigation and communications systems are now just around the corner. By 1990, they will be standard.

"And once you have this kind of sophisticated equipment on board, it only makes sense to use it as fully as possible. So other functions, such as monitoring engine performance, the ship's paperwork and recordkeeping, will be automated also," he predicts.

Satellite navigation systems have another implication for 1990s marine transportation system, Gibson points out. Their use aboard the majority of ships in the world's fleet will permit the establishment of satellite and computer-based traffic control systems, particularly in congested waters; such as, the English Channel and Block Island Sound, off the New England coast.

Shore-based traffic controllers will monitor vessel movements in these areas, much as air-traffic controllers watch over aircraft. "Keeping track of 20 or more targets on a radar screen at once places a heavy burden on ship's personnel, who have other things to do at the same time. Yet this is exactly the way navigation in close areas is handled today. Traffic control centers—dedicated to this single purpose—make a lot more sense."

In addition to improving the safety of marine operations, the use of satellite-computer systems in shipping operations will result in increased productivity.

Propulsion system performance and wear on a ship's equipment can be monitored so that necessary parts can be replaced and adjustments made before a ship-stopping breakdown occurs.

A ship's route can be revised while the vessel is at sea to take advantage of the best existing weather and sea conditions between it and its destination, thus permitting the vessel to maintain its most efficient speed.

These uses will result in improved service for shippers. More realistic and reliable ship schedules will result, eliminating the lost time and additional costs created by cargoes waiting on a pier for a ship to arrive.

Satellite communication

A satellite communications link connecting computers across the oceans will overcome the problem now being faced of cargoes arriving at their destination before the necessary manifests and other documentation can. This means ships and cargoes are delayed at the dock until the needed papers arrive.

Computer-link transmission of these documents will climinate the bottlenecks posed by such a situation and insure that the simplified cargo documentation in use 20 years from now is available when and where it is desired.

These sophisticated electronic systems will also aid in improving the service offered by shipping lines to their customers. More realistic and reliable scheduling will result, as will the more efficient processing of the necessary manifests and cargo documents necessary to complete a cargo movement.

Sophisticated skills

Finally, Gibson says, there will be a significant metamorphosis in the type of skills required aboard merchant ships. Crews will have to have more sophisticated skills for the use and care of the advanced equipment aboard the ships, he says.

"Crew skills are evolving," he explains. "More and more, the men manning American ships are becoming vessel managers and emergency controllers. Using the sophisticated electronic systems that are being adapted for marine use, they will be able to shift their work emphasis from the minute-to-minute operations of the ship to the longer range aspects, including scheduling maintenance and repair activities.

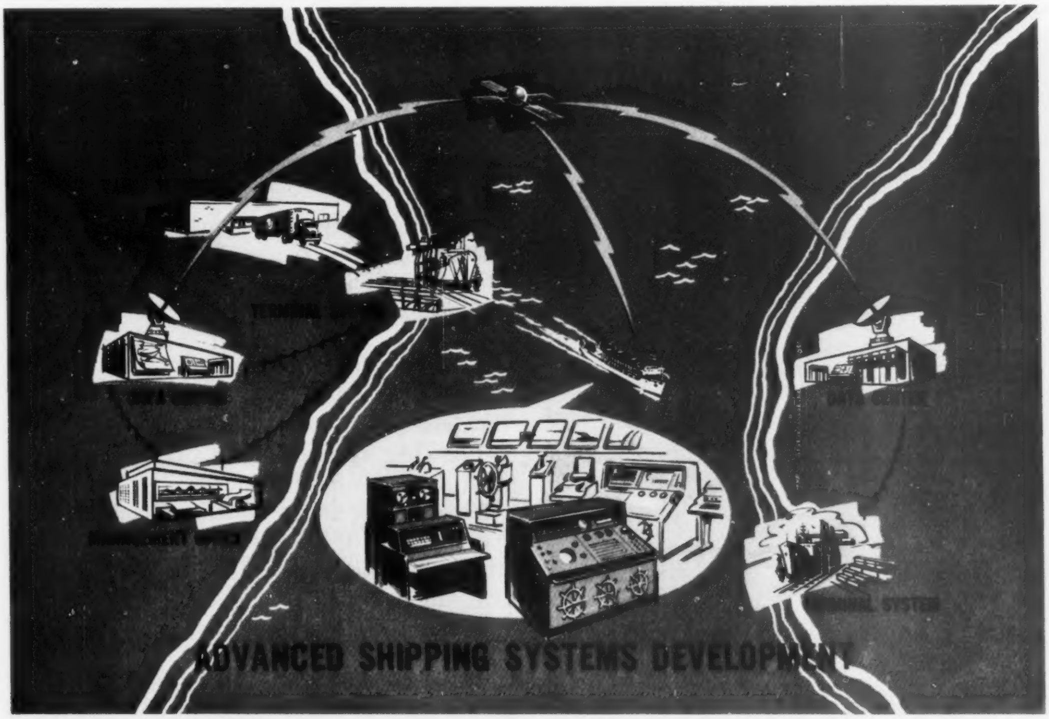
"Additionally, by 1990, I foresee ships' officers and crews performing ancillary functions not directly concerned with running the ship—for example, gathering oceanographic data. We have begun this on a limited scale today, but it will be greatly expanded by 1990, with the changing structure of shipboard jobs leaving more time for less routine, mechanical tasks," he said.

Improved services

Summing up the changes, Gibson notes that all of them will be directed toward offering shippers improved services—to move trade faster, more efficiently, and more economically.

"And this," he concludes, "is one of the most important reasons for having a merchant marine in the first place—to insure that trade is moved under the best possible circumstances."

—Maritime Administration



CONTROL POINT—*Computer monitoring and control of cargo movements from the shipper's door to the consignee's unloading dock will improve the productivity of the entire shipping system. Eventually, these may result in the creation of data centers where all information pertaining to a shipment can be assembled on an up-to-the-minute basis. Satellite communications systems will play a key role.*

Consumer Of 1990 To Leave Wallet Home

Nationwide Grid Will Provide Instant Accident Reports, Resolve Complaints

COMPUTER SHOPPING—*Philco-Ford's "House of Tomorrow" will have a control console for shopping at home. This feminine consumer looks at an outfit on a large video screen used for shopping. The video shopper scans shelves through a camera in a store and she selects what she wants by pushbutton.*

The consumer in the 1990s will shop in a cashless, checkless market place. He, or she, will live in a new era of communications between consumer and merchant.

It will be an era fostered by widespread use of cable television, which may even go so far as to allow the consumer to order goods through interactive systems, using his television for display and his telephone as a computer keyboard.

Consumers and merchants will enjoy reduced costs, brought about by elimination of shoplifting and wider use of the label. They will buy and sell safer products which can be repaired quickly and at lower costs, and use a nationwide system of reporting accidents related to consumer products.

This picture of the American consumer on the threshold of the 21st century is drawn by the staff of the National Business Council for Consumer Affairs.

William D. Lee, Executive Director of the Council, said:

"By 1990, we will be living in a dramatically different electronic age. The key question is whether the laws and regulations we enact between now and then will be forward-looking and flexible enough to allow businesses to use the enormous benefits on the consumer's behalf."

By 1990 consumer credit will be super automated. A consumer, when making a purchase, will use a single card which—after being verified—will automatically transfer funds for the amount of the purchase from the consumer's bank account to the merchant's account.

One of the more serious problems which plague merchants at present is the magnitude of "inventory shrinkage," a euphemism applied to shoplifting.

"By 1990 merchandising techniques will have eliminated shoplifting as a problem for merchants and an added cost for the consumer," according to Paul T. O'Day, Deputy Director of the Council.

One technique which might be used is based on permanent magnetic labels in garments and on products, O'Day explained. The labels would have to be decoded or desensitized at the checkout register to prevent tripping an alarm system at the exits.

The consumer will have a variety of new products to improve the environment in the home. One, the RO Water Ecologizer, uses the reverse osmosis process to produce clean and tasteful water for drinking, beverages and cooking. The unit sits on the kitchen countertop and hooks up in minutes with no plumbing required.

An Air Ecologizer removes airborne pollutants and irritants from the air. It can be moved from room to room. Both products are being introduced by Westinghouse in 10 test markets around the country.

A number of other low cost, fool proof techniques are expected to be developed to thwart the shoplifter.

"Product labels are sure to become more than identification tags," O'Day stated, "They will be used at checkout registers to record the item and amount of the sale, update inventories and initiate product reorders."

Nationwide system

The consumer in 1990 will also see a complete, comprehensive nationwide system of immediate reporting of injuries relating to any consumer product. The system, now under development in the government, will tie into hospital emergency rooms, doctors offices and even to a national sample of households. It is being used in 119 hospitals now and by 1990 should be sophisticated and expanded into a nationwide network.

"It should point up the latent dangers in new products, or dangers which arise from new uses of existing products," Lee pointed out.

Most manufacturers, according to Lee, will have nationwide service networks which will respond quickly and efficiently to consumers with products that fail after purchase.

Modular construction of products is expected to increase enormously, making repair possible at a minimum cost. In many cases the consumer will be able to repair the product himself.

Apart from technological changes, the consumer will find a greatly advanced system of negotiation and resolution of complaints. Widespread use of local consumer councils, voluntary citizens arbitration boards, probably in every major shopping center, will make resolution of consumer-merchant differences.

HOUSE OF TOMORROW—*In Philco-Ford's concept of living at the turn of this century, a console (foreground) controls all entertainment functions and lighting throughout the house. At rear is a portion of the three dimensional television screen.*

Industrial Growth Will Bring Basic World Trade Changes

Duties On Manufactured Goods Could Drop; Larger Role Seen For Developing Nations

BUILDING FUTURE ABROAD—*The foundation for more international trade in the 21st Century is being built today. Part of a gas drying installation at Slochteren, The Netherlands, is shown with a "Christmas Tree" at (right) and a "flare" for burning off excess gas released during testing.*

Vigorous economic growth for the U.S. and other industrial nations appears to be the pattern for the 18 years between 1972 and 1990.

Far-reaching changes

With the continuing growth will be far-reaching changes. Prospects point to an increasing international trade volume, with rising exports and imports for the U.S. The Nation's historic favorable trade balance faces an uncertain future, now made more hopeful by recent currency realignments. Competition among industrial nations and some developing nations for world markets will be intensified. The U.S. will confront new challenges, new opportunities. Some reduction may be made in trade barriers, although in certain cases new restraints may be introduced. Behind all this will be continued inflationary pressures which will require the constant attention of governments.

These are some of the trends that appear in the crystal ball as Commerce's international trade experts attempt to look into the future. Naturally, all forecasts, tentative and subject to change as they must be, are based on the hope that peace will prevail. It is recognized that a new Vietnam could severely distort economic activity and international trade.

Lawrence A. Fox, Deputy Assistant Secretary of Commerce for International Economic Policy, sees five developments looming in the international trade picture by 1990:

- An improved international monetary system and better means of adjustment among currency relationships will facilitate world trade and investment. Currency relationships should better reflect changed competitive conditions among countries, and with greater promptness and less disruptive effect.
- Major industrial nations may be approaching zero duties in manufactured goods in trade among themselves. This would require, of course, a historic international trade agreement that would have to be worked out by extensive negotiations. Such a development would be one of the ways of eliminating discrimination against U.S. goods in the European Common Market.
- Manufactured goods of developing countries will figure more prominently in world trade, and "the U.S. will be taking its fair share."
- Greater competition appears to be in prospect in international trade in agricultural products among producing nations, with a higher reliance on market forces.
- The U.S. will be importing increased quantities of raw materials, including petroleum.

Growth trends in coming years were pictured in a study on "The Growth of Output, 1960-80," issued late in 1970 by the Organization for Economic Cooperation and Development (OECD). The OECD concluded that modern industrial nations have built-in forces favoring strong, self-sustaining growth, such as rapid technological progress, constantly rising expectations of consumers, dynamic attitudes of firms toward investment and innovation, and willingness to engineer and absorb change.

The OECD projected an annual growth rate for its member countries of 5.3 percent in the 1970s compared to 4.8 percent for the 1960s.

Gross domestic product per capita was expected to rise as follows for four key countries during the 1970s in terms of 1968 prices and exchange rates: U.S., from $4,100 to $5,600; Japan, from $1,600 to $3,700; Germany, from $2,100 to $3,200; and France from $2,500 to $4,100.

Japanese income per head by the end of the decade might reach the levels of the Common Market, and West-European levels appear likely to rise faster than North America's.

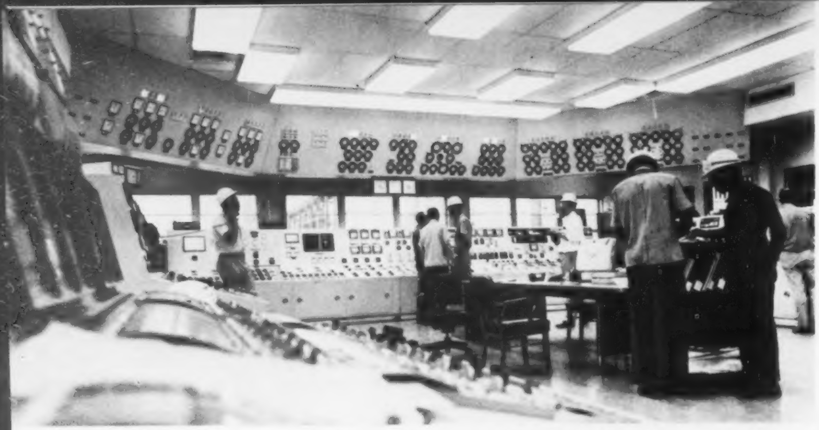
VILLARES
VILLARES
5000 kg
VILLARES
VILLARES

EXPANSION IN SOUTH—*One of a special type of mold being cast at the plant of Acos Villarez, S. A., near Sao Paulo, Brazil. The leading Brazilian special steel producer is receiving financial assistance.*

Herbert H. Glantz, Deputy Director of Commerce's International Trade Analysis Division, suggests that the trends shown for the 1970s decade will continue in the decade of the 1980s. He makes the following points:

International Trade: Higher levels of international trade are likely as multinational corporations produce in the more economic plants, regardless of national boundaries, within limits set by political considerations.

U.S. and other multinational corporations



MOD LOOK IN ALUMINUM—*Control room of Alpart Alumina Plant, Jamaica, W. I., reflects the modern look of the aluminum industry. Reynolds Metal Co. has a 36.8 percent interest in the plant.*

will continue to expand their world-wide operations, affecting more geographic and product areas. There will be more rapid and extensive flow of technology from parents to affiliates and vice versa.

Substantial U.S. export growth is in prospect. The stimulus from currency realignments should be substantial, especially where U.S. products compete with those of other nations. Bigger markets are in prospect for U.S. industrial materials, such as coal, and various agricultural products.

Restoring balance

Restoration of at least a modestly favorable U.S. trade balance is possible in the years ahead. Nevertheless, individual years of trade deficits may occur, particularly if the U.S. economy expands considerably faster than foreign economies or if actual or threatened strikes lead as in the past to large-scale anticipatory buying of foreign goods.

Achievement of a multibillion dollar U.S. trade surplus will depend on: the effect of the recent revaluation of foreign currencies and the greater assurance of realistic exchange rates in the future among major trading countries; whether the U.S. Government, management and labor work to achieve a more stable cost and price structure than that of competitors; the intensity of the selling effort made by U.S. industry to regain markets lost at home and abroad to producers of other nations and success in making breakthroughs in new products which bring large export gains; and whether foreign nations substantially lower non-tariff barriers to imports of U.S. products, particularly agricultural commodities.

Competition for world markets will be intensified, however, especially among industrial nations and more advanced developing countries. Expanded production facilities and technological capability of foreign nations will pose new challenges to U.S. producers in the domestic market and abroad.

Expansion of the Common Market from six to ten members will create problems as well as opportunities for U.S.-based firms.

Stronger competition

Imports into the expanded Common Market from the U.S. and other non-participating nations will be adversely affected by the tariff discrimination favoring member nations. But higher levels of economic activity stimulated by enlargement of the Common Market should increase demand for U.S. and other foreign goods.

Common Market firms will be tougher competitors in markets beyond their borders.

U.S. trade with communist nations is likely to expand as conditions of competition for American exporters are made more equal to those of exporters of other non-communist nations.

International trade barriers may be reduced further, stimulating greater exchanges of goods. New multinational negotiations under the General Agreement for Tariffs and Trade (GATT) may be undertaken later in the current decade.

A number of advanced nations are putting into effect plans to reduce tariff barriers to the entry of goods from developing countries.

Some governments may react to the greater competitive pressures by imposing new trade restraints to shield industries which are sensitive for political or social reasons, and for similar reasons private restrictive arrangements may spread, at times with government blessing.

"Vigorous domestic and foreign demand for goods of developed nations," Glantz commented, "will create heavy upward pressures on costs and prices.

"Inflation will remain an ever-present threat to domestic and international economic stability for this and other nations.

"Even in periods of sluggish demand, cost and price pressures will be severe as key sectors of the U.S. and other developed economies come increasingly under the market influence of large firms and large labor organizations and as interdependent economies become more vulnerable to pressures from comparatively small economic groups.

"Governments will, therefore, have to deal with inflation on a continuing basis."

Industry Seen Making Giant Environmental Strides As 1990s Open

But Many Battles Will Still Have To Be Fought, Cautions Pollution Control Council Report

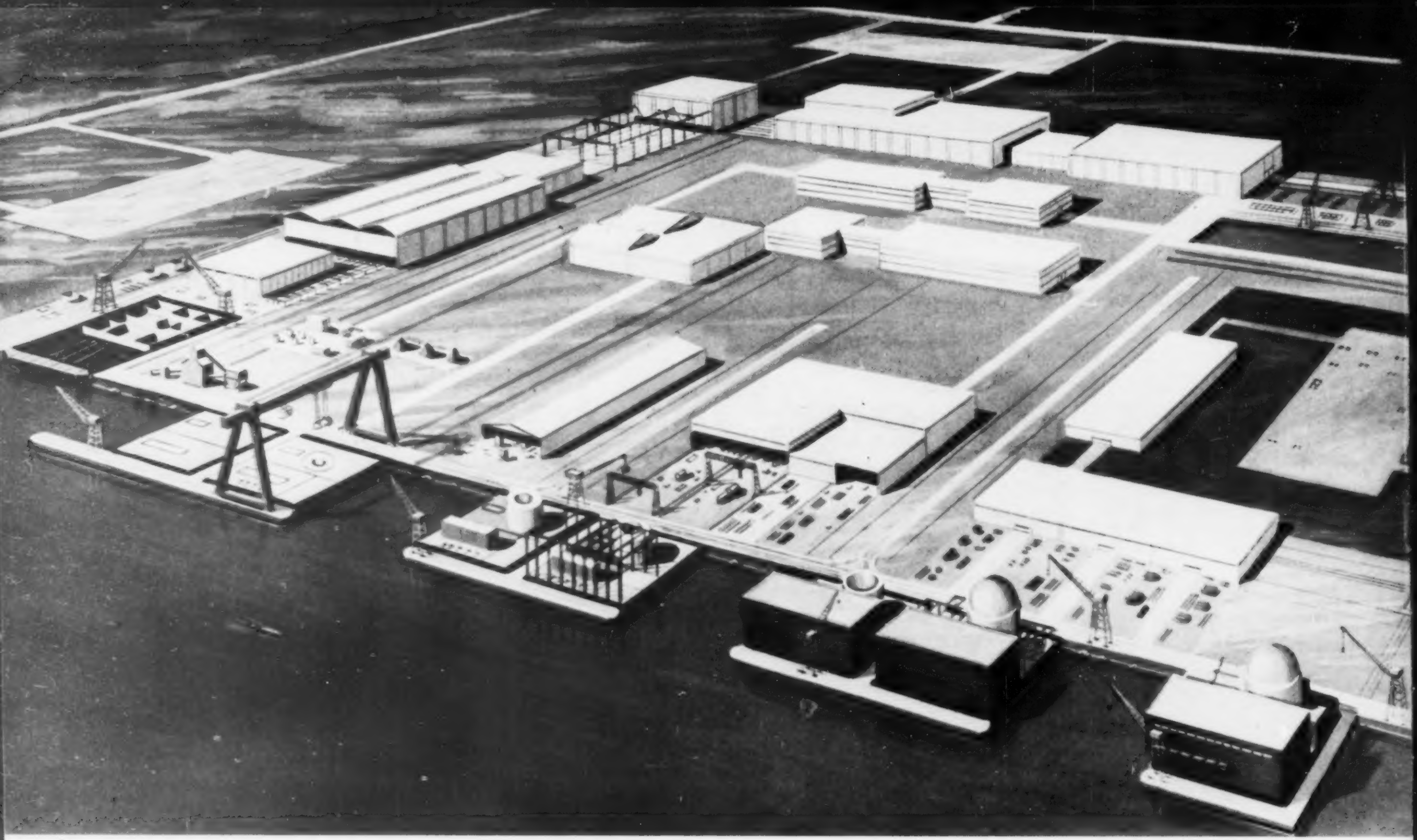
"We need lumber to build our homes—but we also need untouched forests to refresh our spirits. We need rivers for commerce and trade—but we also need clean rivers to fish and sit by. We need land for homes and for great industrial plants, but we also need land free from man's works."

These words of President Nixon have been echoed by business and industry, which are as concerned with cleaning up the environment as everyone else . . . and which *are* doing something about it.

But, as Secretary Stans said in his noteworthy "Wait A Minute" speech, "None of the major (environmental) problems we face can be resolved instantly. All of them are too complex. They call for long-range programs and careful consideration of priorities and financing."

It is true that with the research and development measures and the construction endeavors undertaken by industry over the past two decades—and in particular, the strides which have been made during the last two years—many of the environmental problems known today will no longer exist in 1990.

CLEAN AIR AND WATER—*International Paper's new Ticonderoga, N. Y., pulp and paper mill, operates two paper machines and produces fine business and printing papers. The mill is equipped with waste water treatment systems.*



NUCLEAR FACILITY—*Artist's concept of the proposed Westinghouse-Tenneco facility for the manufacture of floating platform-mounted nuclear power plants for offshore sites to help stop pollution.*

However, as Walter A. Hamilton, Executive Director of the Commerce Department's National Industrial Pollution Control Council pointed out, "Pollution problems will not be entirely solved by 1990."

Underlying issues

Hamilton said that the many of the problems being researched and worked on today will no longer be thought of as issues, but that "the underlying issues that need to be handled will just be coming into focus then."

For example, Hamilton noted that most of the solutions to pollution abatement today use more energy, adding to an already heavily mounting demand for power, which itself is known as a polluter.

"There is no doubt that nuclear energy, which is cleaner, will begin to come into its own. By 1990, in fact, we should see the first family of breeders under construction."

Even more important may be fusion power. For the last 20 years, scientists have been trying without much success to convert the energy of the hydrogen bomb into power. Today, however, researchers are confident that they are licking the problem and are finding the key to fusion power.

By 1990, the United States may be seeing its first real fusion power plant.

Americans will also have to decide what they want in quality of life. With the population still growing and becoming more affluent, demands for not only the streamlined products of today, but the more intricate, advanced goods of tomorrow, will increase. This will call for more industrialization, which in turn will put further demands on the call for power.

Future plants

New plants will be able to be built incorporating all the devices which have been technically proven for the major elimination of air, noise, land and water pollution. Some problems will still remain. Americans must define what is meant by a clean environment.

Perhaps one of the solutions to this problem would be a clearer designation of the use of waterways. Some streams could be set aside for recreational purposes, and some streams the U.S. could understand and accept as not clear streams, but certainly pollution-controlled streams, which could be used for industry. This could be one sensible and realistic solution to a problem of providing streams for man's pleasure and streams for service to man.

No auto pollution

In 1990, Hamilton said, it is expected that the automobile pollution situation should be completely controlled. Probably the cars from 20 years from now will not be electric vehicles, but rather cars with different types of engines from those used today will dominate the market. These engines will incorporate pollution control design and, or devices that will reduce the amount of toxins emitted into the air, lowering the oxides to a minimum acceptable to the public.

In addition, with the mass transportation systems expected within the next two decades, automobiles will probably be parked outside of urban areas where pollution effects are felt the strongest, and be substituted by high-speed mass transportation systems for entering urban areas. These innovative systems will not only control air pollution problems as far as urban situations are concerned, but, along with videophones, will also allow persons to work and to live even farther out of the metropolitan areas, helping to solve another problem of land crowding and pollution.

One of the most serious problems that will confront the United States in 1990, Hamilton believes, revolves around the food supply for the country. Unless the research being done on pest control turns up one or more which can safely take the place of the persistent pesticides, not only could food be in short supply, but the amount of land and the number of farms needed could both be sharply on the rise.

"No combination of remedies has yet been found," he said.

By 1990, the air pollution problem caused by manmade oxides should be under control in the industrialized countries of the world. "But," he pointed out, "new problems will begin to arise from the industrialization of less developed countries, where their development as commercial nations will seem more important than deterring pollution."

Hamilton does think, however, that significant progress will be seen in international pollution abatement in 20 years.

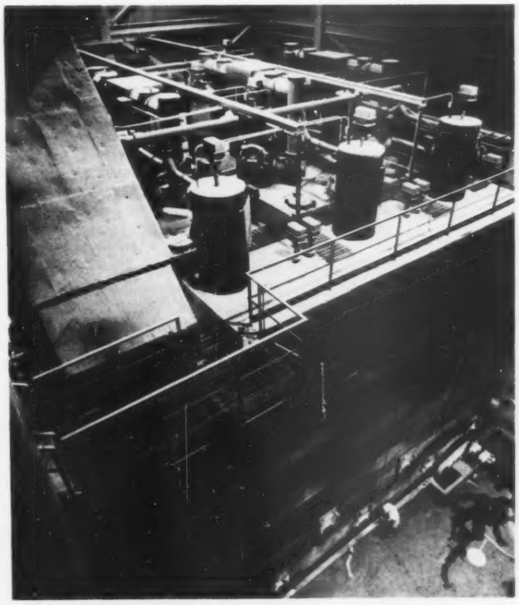
Another strong issue will be, of course, the cost factor. Business alone cannot be held responsible for all of the pollution. The burdens of responsibility and cost must be shared by all levels of government, by agriculture and by the public.

A McGraw-Hill survey report concluded that "American business needs to spend a total of $18.2 billion to bring all of its existing facilities up to present pollution control standards." The Council of Environmental Quality put total public and private spending for pollution control at $105 billion for 1970 through 1975. Governor Nelson Rockefeller of New York State figured a nationwide cost to achieve zero discharge of pollution to reach $2 to $3 trillion dollars.

Hidden costs

In addition to these costs are the hidden elements—plants which will need to close down because they can't profitably convert present systems; unemployment problems which will arise in one-industry towns where plants close; environmental control costs which will strike unevenly and impact some firms and industries to a disproportionate extent; construction delays due to environmental holdups which will cause vast economic consequences.

As Secretary Stans said, "The task is large and complex. It will not yield to quick, easy, simplistic solutions. Nor will those solutions become available just by setting unrealistic timetables. The preservaton of the environment must be an endless effort by everyone."



AIR PROTECTION—*An unusual over head view of a new electrostatic precipitator at International Paper Company's new Ticonderoga, N. Y., pulp and paper mill. It is more than 99 percent efficient.*

Newsmemo

How to do more business with the Soviet Union brought 250 exporters from 18 States to a meeting in Phoenix recently. Two commercial officers from the Soviet Embassy in Washington described the USSR's interest in increasing U.S. business contacts. A Commerce Department official, a banker, an industrialist and an air cargo specialist reviewed the situation from the U.S. side. A 70-page transcript of the proceedings is now available at $10 from James M. Leinenkugel, Chairman, Arizona Regional Export Expansion Council, Room 5413 Federal Bldg., 230 N. 1st Ave., Phoenix, Ariz., 85025. Sponsors of the meeting were the Arizona REEC, the Arizona World Trade Association, Arizona State University and Thurderbird Graduate School of Int'l Management.

Expertise in agribusiness by major U.S. corporations will be put to work in Central America through a new AID loan. The $6 million from AID goes to build up the lending capital of the Latin American Agribusiness Development Corporation (LAAD), and could result in $40 million in investment activity in production, processing and marketing off Central America's farms. Participating with LAAD in this venture are the Bank of America, Borden's, Cargill, Caterpillar, CPC, Deere, Dow, Gerber, Monsanto, Ralston Purina, Standard Fruit, and the investment association called ADELA.

Improving trade relations between the United States and the Soviet Union involves, among other things, improving the business facilities for American traders within the USSR. So concluded the Commerce Department trade delegation that recently visited the Soviet Union, as reported in our Jan. 10 issue. Now comes word from American Express that a telex link between Moscow and the U.S. was opened on Jan. 25. The first message along the new line was to Commerce Department, thanking Secretary Stans for assistance in the negotiations to arrange this segment of the American Express worldwide telecommunications system.

Another kind of international business link has been strengthened: the three-way tie between OPIC, Commerce and potential U.S. investors in the developing nations. OPIC is the Overseas Private Investment Corporation, the quasi-public agency that offers political risk insurance, investment guarantees and dollar and local currency loans. The Commerce unit is the Foreign Investment Services Division of the Office of International Investment. OPIC and Commerce will now share each other's expertise in the overseas investment field and will refer potential investors to each other as the individual situations indicate.

International Trade Winds

TIRES—International B.F. Goodrich Co., Akron, has begun an expansion of its tire plant in Iran that will double production capacity by the end of 1972. The plant, located in Tehran, produces passenger car, truck and bus tires and tubes.

HEATING EQUIPMENT — The Babcock & Wilcox Co., New York, has signed a licensing agreement with Apparatebau Rothemuhle of Olpe, West Germany to manufacture, market, erect and service the Rothemuhle regenerative air heater in the United States, Canada and Mexico. Such heaters are used with boilers to reclaim heat from boiler flue gases that otherwise would be lost. There are now more than 300 operating installations, with more than 100 others on order.

ENVIRONMENTAL CONTROL EQUIPMENT—Robertshaw Controls Co., Richmond, has acted to expand its distribution in Europe of environmental controls for buildings by completing a licensing agreement with Landis & Gyr AG, a Swiss controls company. The new agreement is in addition to an existing arrangement with Satchwell Control Systems Ltd., Slough, England; both companies will supply products for the growing European market for environmental control equipment in commercial, municipal and industrial buildings. Landis & Gyr, which is headquartered at Zug, Switzerland, recently acquired a Swedish controls firm, Billman Regulator AB, and is reported by Robertshaw to be the largest comfort control company in continental Europe. Prior to manufacturing Robertshaw products on a royalty basis, as Satchwell does in the British Isles, Landis & Gyr plans to purchase pneumatic and electronic components of building control systems. The firm will also engineer and install the systems.

PAPER PRODUCTS — Kimberly-Clark Corp., Neenah, Wis., has signed a licensing agreement with C. A. Papaellina & Co. Ltd. of Nicosia, Cyprus, to produce Kleenex facial tissue for the island nation. The Cypriot firm, which also distributes cosmetics and pharmaceuticals, has been importing Kimberly-Clark consumer tissue products since 1953.

INTERNATIONAL COMMERCE REPORT

UNITED STATES
TRADE CENTER

- Seven regional reports on revaluation
- Calendar for world traders
- Licensing, investment proposals from abroad
- Hundreds of overseas sales leads
- Opportunities in major projects worldwide

Currency Changes To Favor U.S. Exporters

In the months ahead, American exporters will have a unique opportunity to take advantage of an improvement in their competitive position abroad.

This improvement stems from the recent realignment of the international monetary system. By agreement among the major trading nations of the world, the U.S. dollar has been devalued 8.57 percent relative to gold—subject to Congressional approval—while key foreign currencies have been revalued by various amounts. The combined effect of these measures is a depreciation of the dollar vis-a-vis other currencies of up to 17 percent for the Japanese yen and by lesser amounts elsewhere.

Basically, the revaluation of foreign currencies means that U.S. goods will be cheaper in international markets since buyers abroad will now need less of their own currency to purchase a given U.S. product. The competitive advantage gained through U.S. devaluation will be particularly large in countries whose currencies appreciated, since not only will U.S. prices be lower in terms of local currencies but U.S. exporters will be in a better competitive position relative to other suppliers to that market. Even in markets where the local currency remains at the same relationship with the dollar, U.S. sales can still benefit from the competitive advantage relative to other exporters.

PHOTO ABOVE—The United States Trade Center in Mexico City, operated by the Commerce Department for U.S. exporters seeking Mexican and Central American buyers, will open Feb. 14 with an exhibition of packaging machinery. Center Director John Reed (left) is shown with U.S. Commercial Counselor Henry L. Pitts.

To take full advantage of the new opportunities, U.S. exporters will have to move quickly to lower prices in terms of foreign currencies. Should they decide, instead, to increase profit margins by raising prices, the competitive advantage gained from the currency shifts will be watered down. The increased profit margins on export business might, however, lead the U.S. exporter to make greater efforts to sell abroad, and this in itself could lead to significant increases in U.S. exports.

American exporters will encounter an atmosphere of considerably less uncertainty this year compared to 1971 when international trade was affected throughout most of the year by the threat of a monetary crisis and currency speculation. The newly established exchange rates should ease a major inhibiting factor facing the international businessman in the recent past. Exporters now will be able to concentrate on identifying new business opportunities abroad.

The increase in foreign demand for U.S. exports resulting from the devaluation will benefit sellers whose products are already established in international markets. In addition, good opportunities exist for firms not now exporting.

Exporters can now be looking for areas of the world in which markets can be established where formerly none existed, due to unfavorable competitive conditions. Particularly in the developing countries where strong incentives exist to minimize import costs and where competition from suppliers in Europe and Japan is especially keen, opportunities for new business will be opening up this year as the U.S. devaluation lowers prices for U.S. goods.

Price-sensitive goods

Exports which should benefit most from currency realignment are those products for which price is of primary importance to the buyer. In general, this category includes goods such as consumer products, metals, and certain machinery items which have close substitutes readily available from other suppliers. Lower prices on these products can result in substantially increased sales.

The less price-sensitive exports include products which embody a high degree of technological content. Traditionally, these have constituted a significant proportion of U.S. exports. But while these products may not benefit as extensively as some others, considerable additional sales can be generated by lower prices made possible by the dollar devaluation.

Another factor brightening the export picture is the prospect of increased convertible currency earnings on the part of the developing countries. Since imports into Europe and Japan from these areas will now cost less, developing country sales of some products to these markets should increase. The additional earnings could be used for stepping up imports, and with the revaluations, the United States should be in a better position to get more of the business.

Although U.S. exporters can benefit substantially from exchange rate realignment, a considerable marketing effort will be required to take full advantage of the new opportunities. For one thing, American producers will still be at a price disadvantage relative to competitors in some product lines since the amount of dollar depreciation may not fully close the gap between the U.S. and foreign price levels. Thus, other factors influencing sales—such as delivery time, financing, service— will continue to demand attention.

Moreover, intense competition can be expected in foreign markets both from local producers and from other exporting countries. Foreign economic growth will continue this year, but no sharp advance is anticipated and considerable excess capacity remains in most major countries. Competitors abroad, faced with only moderately growing demand at home, will have a significant incentive to meet U.S. price changes.

The implications of the new monetary arrangements as they affect each major world region are discussed in the following columns. An exchange rate table covering more than 120 nations was published on Page 54 of the Jan. 24 issue of *Commerce Today.*

This and the following seven regional articles assess the effect on the U.S. competitive position in foreign markets of the recent realignment of the international monetary system. The reports were prepared by specialists in the Commerce Department's Office of International Commercial Relations (OICR). The accompanying tables were prepared by OICR's International Trade Analysis Division.

Impact Is Immediate With Latin Customers

Currency realignments are having an immediate impact on the U.S. competitive position in Latin American markets.

The U.S. Embassy in Colombia reports that the changes have placed American firms in a favored position in competing for a $2 million irrigation project calling for supplying dump trucks, cement mixers, generating units, compressors and other earth moving equipment.

Another report, from Central America, states that in spite of efforts by importers of Japanese tires and automotive parts to absorb part of the increased costs, prices of these Japanese goods rose by 10 to 15 percent.

A manufacturer of agricultural tractors and machinery foresees a significant market improvement, while a manufacturer of plastic molding machinery plans to reenter the Latin American market as a direct result of his firm's more competitive price structure vis-a-vis Japanese competition. New opportunities, it is apparent, exist in virtually all major categories of machinery, tools, equipment and chemical products.

Virtually all Latin American countries chose to maintain unchanged relationship of their currency to the dollar. Only the small, former European possessions of Barbados, Jamaica and Surinam, which retain strong trade ties with

Europe, and Venezuela, which upvalued by 2.28 percent, appreciated their currencies in terms of the dollar.

This means that Latin America will be depreciating its currencies relative to Europe, Japan and Canada, major competitors of the United States in the Latin American market.

Last year's gain slight

U.S. exports to the region (the 22 OAS countries) showed only a slight increase in 1971, rising by about 1 percent over the preceding year to $6.1 billion. This was a disappointing performance after the brisk expansion which took place in 1969 and 1970, with the improvement in Latin American export earnings.

The downturn resulted from a slowdown of economic expansion in the region and the continued decline in the U.S. relative share of the market. It is expected that these conditions should be reversed in 1972. In Mexico, the principal market (26 percent of total U.S. exports to the region), an upturn is expected after the 1970 slowdown, but since the U.S. already supplies two thirds of this market the effect of revaluation will be more limited.

Exports to the booming Brazilian market, which is already the second major U.S. market (16 percent of total exports), rose by about 17 percent in 1970 and are expected to score an even greater advance in 1972. In Venezuela, the third largest market (13.3 percent of total exports), increased earnings from petroleum and a high level of economy activity, plus a slight revaluation of the local currency relative to the dollar, should stimulate U.S. exports to the region.

While overall growth of exports to the Andean, Caribbean, Central American, and River Plate nations, which together comprise about 40 percent of U.S. exports to the region, is expected to be less brisk, U.S. exports should be favorably affected by the improvement in relative share of the market. The international currency changes will influence the region's capacity to import, its overall level of imports, and the geographical pattern of imports.

Cheapening of Latin American currencies relative to Europe, Canada and Japan will mean increased Latin exports to these areas and thus increased export earnings. While demand elasticities of Latin American exports of primary commodities are not high, nevertheless, lower prices (in local currencies) in Canada, Europe and Japan for bananas, cocoa, fishmeal, meats, minerals and other commodities should stimulate exports of these products.

In addition, Latin America's incipient exports of manufactures, which have been growing at an annual rate of 12 percent and now comprise about 13 percent of the region's exports, will be on the average 12 percent cheaper in world markets than competing products from Canada, Europe and Japan. This relative price reduction plus the extension of generalized trade preferences by Europe and other industrialized nations should give a strong fillip to exports of manufactures by Latin America.

Moreover, the stimulus to the U.S. economy of the New Economic Policy, which is expected to increase U.S. Gross National Product in 1972 by about 9 percent (in current value), will contribute to an expansion of U.S. imports of raw materials and semi-processed goods from Latin America.

The effect of the exchange rate realignments on Latin America's capacity to import depends on whether that region's export earnings are in excess or fall short of the increased foreign exchange cost of its imports. Since Latin America in the aggregate exports considerably more to Canada, Europe and Japan than it imports, a net improvement in its capacity to import should result.

Currency Shifts: A Competitive View

Supplier [1]	Percent change [2]	Market share [3]
Argentina (peso)		
United States	+21.4	24.9
Germany	+37.8	11.0
Italy	+30.5	7.2
United Kingdom	+31.7	5.5
Japan	+41.8	5.0
France	+31.7	3.8
Brazil (cruzeiro)		
United States	— 5.4	32.2
Germany	+ 7.5	12.6
Japan	+10.6	6.2
United Kingdom	+ 2.7	5.6
France	+ 2.7	3.1
Italy	+ 1.7	3.1
Mexico (peso)		
United States	0.0	63.8
Germany	+13.6	7.5
France	+ 8.6	4.3
Japan	+16.9	3.5
Switzerland	+13.5	3.0
United Kingdom	+ 8.6	2.9
Venezuela (bolivar)		
United States	— 2.2	48.9
Germany	+11.1	9.0
Japan	+14.3	8.0
United Kingdom	+ 6.2	5.2
Italy	+ 5.1	5.0
Canada	— 1.7	4.0

[1] Major suppliers of industrial goods.
[2] Percent change since May 1, 1971, in local cost of supplier currency.
[3] In percent, 1970.

The monetary changes have an impact on the region's exchange reserves and on its external debt which in turn influences the capacity to import. More than 50 percent of official Latin American exchange reserves are held in dollars and to the extent that these reserves are used for purchases in currency-appreciating regions their value will fall.

This negative effect on Latin America's capacity to import should be outweighed, however, by the effect of exchange realignment on Latin America's debt servicing obligations. Since most of Latin America's external debt is denominated in dollars, servicing of this debt will become easier with exchange realignment. Thus, on balance, Latin America's earnings of foreign exchange and its capacity to import should improve.

This improvement in the region's capacity to import should soon be translated into a higher actual level of imports. The region has a high propensity to import, and it is unlikely that increased earnings will remain unutilized. Latin America's development programs call for a minimum growth rate of 5 percent annually in GNP. To achieve this rate of growth, imports must rise by about 6 percent.

The slow decline in the U.S. relative share of the Latin American market, from 48 percent of total imports in 1958 to 40 percent in 1969, should be reversed in 1972. Assuming that U.S. productivity increases and that inflation is contained at home, the U.S. share of the Latin American market should rise to about 42 percent in 1972, with further improvement in the market share taking place as the full effect of the price adjustments work themselves out.

The major competitors in the Latin American market are Western Europe, with about 31 percent of the market, Japan with about 6 percent and Canada with about 2 percent. The currency realignment that began on Dec. 18 means that U.S. goods now enjoy an average price improvement, as compared to the period prior to the adjustments, of about 12 percent as against major competitors.

In relation to German products, U.S. goods are now about 14 percent cheaper; in relations to British and French goods, they are about 8.6 percent cheaper and in relation to Japanese goods, about 17 percent cheaper.

Latin American importers are highly price conscious, and the new favorable relationship for U.S. products should exert a strong pull in diverting imports from Europe to the United States. A rise in market share to 42 percent of total Latin imports would in itself bring about an increase of about $280 million in U.S. exports.

Canada Stance Unchanged But U.S. Sales Should Gain

Canada made no change in its currency as a result of the new monetary arrangements but will continue to maintain a floating exchange rate without government intervention except as required to maintain orderly conditions.

The Canadian dollar was unpegged in June 1970 from its fixed rate of 92.5 U.S. cents and has since floated upward in relation to the U.S. dollar. In the last quarter of 1971, the value of the Canadian dollar fluctuated between 99 U.S. cents and par with the U.S. dollar. When the U.S. dollar is devalued, the Canadian dollar will simultaneously move downward, maintaining the same differential between the two currencies.

Despite the unchanged position of the Canadian dollar, U.S. exporters should find the new monetary arrangements benefiting their sales in the Canadian market. The pace of these sales is closely linked to the rate of growth of the Canadian economy. The removal of uncertainties about international monetary arrangements and the lifting of the U.S. import surcharge has given a boost to Canadian business confidence which had been shaken by the world monetary crisis.

Currency Shifts: A Competitive View

Supplier [1]	*Percent change* [2]	*Market share* [3]
Canada (dollar)		
United States	— 0.5	71.1
United Kingdom	+ 8.1	5.3
Japan	+16.1	4.2
Germany	+13.0	2.7
France	+ 8.1	1.1
Italy	+ 7.0	1.0

[1] Major suppliers of industrial goods.
[2] Percent change since May 1, 1971, in local cost of supplier currency.
[3] In percent, 1970.

With Canadian exports heavily dependent on the U.S. market, the U.S. surcharge imposition and the exclusion of foreign-origin machinery from the Investment Tax Credit raised doubts in the Canadian business community as to the prospects of sales to the United States. This widespread uneasiness had threatened to slow Canadian economic recovery, which was showing signs of strength in the latter half of 1971. As a result of the economy's sluggish performance in 1970, U.S. exports to that market had declined slightly after having registered substantial annual gains in the previous decade. The year 1971 was considerably better, with an increase of 10.4 percent.

Capital goods prospects

The resurgence of confidence enhances the prospects for a rapid growth of the Canadian economy in 1972. The improved business climate should give an impetus to spending for plant and equipment, and result in better sales possibilities for capital goods. The United States traditionally has been dominant as a supplier in this sector.

U.S. exporters should also gain on the Canadian market as a result of an improved competitive position vis-a-vis third countries. Although no change took place in the U.S.-Canadian monetary relationship, the currencies of the chief competitors appreciated substantially. Based on the May 1, 1971, exchange rate for the Canadian dollar, the value of the Japanese yen rose by 16 percent, the German mark by 13 percent, and the British pound by 8 percent (see box). This should strengthen the position of U.S. products in Canada, where they hold the lion's share of the import market—more than 70 percent. In finished products, the U.S. share of the Canadian market is even larger—approximately 80 percent.

U.S. stands to gain

Among the areas in which the United States stands to gain from a better competitive position are automotive products and certain consumer goods. In recent years, there has been a growing Canadian demand for small cars from overseas sources such as Japan, Germany, and the United Kingdom. In 1971, vehicles from overseas accounted for 24 percent of Canadian car registrations. With U.S. car prices now more attractive, we should be able to take advantage of the strong market for new autos. Sales of U.S. models produced in Canadian branch plants should also increase, and this will mean export gains for the United States in automotive parts.

Rapid economic growth in Canada over the next few years is expected to spark a substantial boom in consumer goods purchases. Although consumption is largely satisfied from local production, there should be increased opportunities for U.S. exporters. For example, an improved price position will help the U.S. to compete on better terms with the Japanese in sales of photographic equipment, stereo systems, and home furnishings.

Taking into account the renewal of business confidence in Canada, the intention of the Canadian government to pursue policies aimed at stimulating the economy, and the stronger position which the U.S. exporter will have vis-a-vis third country competition, Canada should prove an increasingly attractive market to American firms that are seeking to expand their export sales.

U.S. Gets Price Advantage In African Import Markets

U.S. export sales in Africa should receive a healthy shot in the arm as a result of the new currency alignments.

These changes have improved the U.S. position by making the American dollar and thus American exports less expensive when compared with European and Japanese competition.

Sales opportunities

New U.S. sales opportunities will materialize both in countries which have maintained currency parity with gold and in countries which have devalued with the dollar. The U.S. trade advantage created by devaluation may, however, be eroded in African countries which have not devalued whenever exporters in the United States raise prices or importers in these non-devaluing African countries refuse to pass on to consumers the lower import prices. These price manipulation situations do not exist where the African country devalued along with the dollar.

More competitive

In most African countries associated with the European Economic Community, preferential tariff rates are granted to EEC members. For most commodities these preferences range between 5 and 10 percent. This obstacle to U.S. exports will be alleviated by the currency realignment since U.S. prices have dropped by an average of 9 percent when compared with EEC export prices.

The appreciation of the European and Japanese currencies relative to the dollar gives the United States a significant advantage in all of Africa's principal markets, as these countries are generally the major suppliers of foreign goods to Africa.

Nigeria, for example, purchased 31 percent of her imports from the United Kingdom in 1970, while the combined proportion for Japan and West Germany was a substantial 19 percent. In contrast, the U.S. share was only 15 percent. France is overwhelmingly Algeria's main supplier with 42 percent in 1970. The West German share was 10 percent, and the United States provided 8 percent of the total.

New alignments

Francophone Africa, including North Africa, has opted to maintain the par value of its currencies in terms of gold. This reaction is especially appropriate for the 12 CFA franc countries whose monetary systems are closely associated with the French franc and the French Treasury. Other countries retaining par values are Nigeria, Ethiopia, Malawi, Somalia, Sierra Leone, and Gambia. The currencies of these countries will, consequently, appreciate relative to the dollar. Imports from the United States will be cheaper.

The East African Community (Kenya, Tanzania, and Uganda), Zambia, and Zaire have decided to follow the dollar and thus devalue in terms of gold and major European and Japanese currencies. In these countries, although the cost of buying U.S. commodities stays the same, it will be more expensive to buy European and Japanese commodities.

South Africa and Ghana have devalued by more than the United States. The percentage change in terms of the devalued U.S. dollar is minus 4.8 percent for South Africa and minus 43.9 percent for Ghana. This action may result in a lower total import bill for these two countries. A high proportion of U.S. exports to South Africa and Ghana, however, are capital goods which will continue to be imported in order to achieve desired rates of economic growth.

Moreover, the United States will maintain its advantage in these markets since the favorable relationship between the dollar and the currencies of European and Japanese suppliers is preserved. This advantage resulted from the U.S. devaluation and was strengthened vis-a-vis Germany and Japan by their revaluations.

Shift to U.S. forecast

A shift in African sourcing of imports to the United States is anticipated because Africa's main suppliers are precisely those countries whose currencies have appreciated relative to the dollar and whose exports face U.S. competition. Chief U.S. competitors for the increasingly lucrative African market are France, United Kingdom, West Germany, Japan, and Italy. The combined share of the African market accounted for by Japan and West Germany in 1970 was a significant 16.4 percent. The U.S. proportion was 11.7 percent. Because of their currency revaluations, the U.S. competitive position has improved the most vis-a-vis those two countries.

In most cases, the expected improvement in the U.S. share of the African market will be at the expense of third-country suppliers and not of local African producers. Generally speaking, African countries do not produce the type of capital equipment that accounts for most American manufactured exports. Even South Africa, which has well-developed capital goods industries, depends heavily on American, European, and Japanese sources for much of its technologically advanced equipment needs.

The U.S. trade advantage secured by the dollar's devaluation and enhanced by the revaluations of West Germany and Japan will be most productive in the capital goods industries in all African countries. Best prospects in the next few years are: transport, mining, and construction equipment; telecommunications; electric power generation equipment; agricultural and irrigation-flood control equipment; food processing machinery; equipment for manufacturing metal products, chemicals, and textiles; and engineering services. It is within these categories that the more immediate export opportunities should be found. The possibilities for increased sales of consumer goods are less promising primarily because of generally low consumer purchasing power.

Currency Shifts: A Competitive View

Supplier [1]	Percent change [2]	Market share [3]
Algeria (dinar)		
United States	− 7.9	8.0
France	0.0	42.4
Germany	+ 4.6	10.0
Italy	− 1.0	7.3
Belgium-Luxembourg	+ 2.8	3.5
United Kingdom	0.0	3.3
Kenya (shilling)		
United States	0.0	8.4
United Kingdom	+ 8.6	29.2
Japan	+16.9	10.7
Germany	+13.6	7.9
Italy	+ 7.5	4.4
France	+ 8.6	3.6
Nigeria (pound)		
United States	− 7.9	14.5
United Kingdom	0.0	30.7
Germany	+ 4.6	13.0
Japan	+ 7.6	6.3
Italy	− 1.0	4.8
Netherlands	+ 2.8	3.6
South Africa (rand)		
United States	+ 5.0	16.6
United Kingdom	+14.0	22.0
Germany	+19.3	14.6
Japan	+22.7	8.7
Italy	+12.9	4.1
France	+14.0	3.5
Zaire (zaire)		
United States	0.0	11.7
Belgium-Luxembourg	+11.6	21.9
Germany	+13.6	9.1
Japan	+16.9	8.1
France	+ 8.6	7.1
Netherlands	+11.6	5.9

[1] Major suppliers of industrial goods.
[2] Percent change since May 1, 1971, in local cost of supplier currency.
[3] In percent, 1970; for Zaire, 1969.

For four of developing Africa's leading markets best prospects are:

Nigeria—construction materials and equipment, transport equipment, textile equipment, agricultural and food processing equipment, air conditioning and refrigeration units and parts, electric power equipment, chemicals and pharmaceutical manufacturing facilities and low cost housing materials.

Algeria—mineral exploration and exploitation equipment, mechanical handling equipment, dairy equipment, chemical production equipment, office and statistical machines, machine tools for metal, petroleum and natural gas equipment, irrigation-flood control equipment, and air conditioning and refrigeration equipment.

Zaire—construction materials and equipment, electric power equipment, road transport equipment—especially trucks—machine tools for metal, aircraft, and aircraft support equipment, railroad equipment, mechanical handling equipment, food processing equipment, agricultural equipment, air conditioning and refrigeration equipment, petroleum and natural gas equipment, packing equipment, and paper manufacturing equipment.

Ivory Coast—transport equipment—especially trucks and tractors—construction machinery and supplies, agricultural equipment and chemicals, food processing and packaging machinery, power tools, logging and woodworking machinery, and textile machinery.

The currency realignment alone, however, will not produce new African markets for U.S. goods. If American exporters expect to capitalize fully on this exceptional opportunity, they should make a special effort to sell in the African markets now and to back up that effort with the credit terms, delivery schedules, and service needed to compete effectively. And when dealing with customers in French-speaking countries, use that language in correspondence and conversation!

U.S. Competitive Edge Sharpened In Far East

The recent realignment of foreign exchange rates should significantly sharpen the competitive edge of U.S. exports to the Far East, which accounts for nearly one fifth of total U.S. foreign sales.

For American suppliers interested in increased opportunities, the key feature of the currency changes is the 16.88 percent appreciation of the Japanese yen in terms of the U.S. dollar. This opens up new sales prospects both in Japan itself and, more importantly, in third markets of the region where Japan is the United States' most formidable competitor.

Two groupings

The new exchange rates for the other major trading countries of the area break down into two groupings: the five Commonwealth countries—Australia, New Zealand, Hong Kong, Malaysia, and Singapore—which followed the United Kingdom by appreciating their currencies by 7.9 percent against the dollar (although in Australia and New Zealand, the actual market rate established by the respective governments represents an appreciation of only 6.32 percent); and the remaining five countries—Korea, Taiwan, Philippines, Indonesia, and Thailand—whose exchange rates in terms of the U.S. dollar remain basically unchanged.

These monetary developments came at a time when U.S. shipments to the Far East had fallen off for the first time in recent years. In 1970, U.S. exports to the region—valued at $8.9 billion—had registered a record gain of 23 percent over the previous year, largely explained by a sharp one third rise in sales to Japan which represents one half of the U.S. regional market.

In contrast, in 1971 U.S. sales to the region were off by 6 percent. Again, exports to Japan, which dropped by 13 percent reflecting a prolonged economic slowdown in the country, represented the major factor in the regional performance.

Changes in sales to most of the other markets were of more modest proportions, and where there were declines, the U.S. dock strikes were partly responsible. For despite a few weak spots, the economic outlook for the developing countries of the area remains favorable, and their individual import requirements for ongoing industrialization programs continue at high levels.

With the chief exception of Japan, the greater part of U.S. sales to the region is made up of manufactures, particularly machinery and equipment. Some significant quantities of agricultural commodities—such as wheat, raw cotton, soybeans, and tobacco—are exported to other countries. For the most part, however, the demand for agricultural commodities is relatively unresponsive to price changes, and in the Far East a considerable portion is shipped under P.L. 480. It is thus in manufactures that the major competitive impact of the currency realignment is likely to be felt.

In the country-by-country review that follows, allowances are not specifically made for the pricing changes that may be instituted by individual suppliers. Some U.S. exporters, for example, may not lower their prices (in foreign currencies) to reflect the full extent of the currency realignment. And some foreign producers can be expected to absorb, at least in the short run, part of the revaluation effect so as to narrow the competitive edge of U.S. manufactures. Foreign importers may also adjust their profit margins in varying degrees.

The importance of these factors cannot be predicted at this time, but they are likely to moderate the price advantage gained by U.S. products in Far Eastern (as well as other) markets.

Taking a look at the United States' $4 billion market in Japan, here the theoretical U.S. price advantage is substantial. The accompanying table indicates the currency changes in terms of Japan's new "central rate" of 308 yen to the U.S. dollar. The yen is currently exchanging, however, at the rate of about 314 yen to the dollar—close to the lower limit of the 2.25 percent margin permitted on either side of 308—which yields a lower price in Japan for U.S. products of approximately 13 percent.

Short-term outlook

Despite the magnitude of the revaluation, short-term benefits will be spotty. More than one half of U.S. exports to Japan consists of agricultural and forestry products, industrial raw materials such as coking coal, metal ores and concentrates, ferrous and non-ferrous scrap, and bulk chemicals. Demand for these products, as mentioned earlier, generally tends to be relatively price inelastic.

The remainder of U.S. exports to Japan consists of various types of manufactures, ranging from low-technology products such as nonmetallic mineral manufactures and sporting equipment to high-technology products such as jet aircraft, computers, and machine tools. But the higher-technology manufactures, which make up one quarter of total U.S. exports to Japan, are less responsive to price changes than the lower-technology manufactures, which comprise only about 10 percent of the total.

Consumer goods, which account for only 5 to 6 percent of U.S. exports to Japan, therefore, constitute the product category most likely to afford opportunities for increased U.S. exports as a result of the new monetary arrangements. The basic reason is that the demand elasticities for consumer products such as phonograph records and tapes, color film, toys, sporting equipment, pharmaceuticals, textiles and apparel are considerably higher than they are for the "big-ticket," high-technology products, sales of which generally depend more on quality and service than on price.

Assuming the resurgence this year and next of the Japanese economy and a concomitant curtailment of U.S. price increases, exports of U.S. consumer goods to Japan could increase significantly in the next few years. The United States already is the leading foreign supplier for most consumer products, its principal competitors being Germany, the United Kingdom, France, Switzerland, and Sweden. But while new opportunities are clearly available to American manufacturers, they will only be translated into increased sales through intensified promotional efforts.

Investment is a factor

Expansion of U.S. exports of capital goods and other products for use in industry—categories where the United States has traditionally been strong and by far the dominant foreign supplier to Japan—will depend almost exclusively on increased investment activity in Japan rather than on the availability of these products at reduced prices.

Nevertheless, in view of the competitive threat represented by such countries as Germany, the United Kingdom, France, Belgium, Switzerland, Sweden, and of course Japan itself, price reductions could help maintain, if not increase, U.S. exports of such products as machine tools, computers, anti-pollution equipment and systems, pumps and centrifuges, power tools, switchgear, telecommunications equipment, and electric measuring and control equipment. As Japanese producers are not generally allowed to fail, increased U.S. sales to Japan would in most cases be at the expense of third-country suppliers rather than domestic producers.

Basically, the overall condition of the Japanese economy will continue to be the principal factor affecting demand for U.S. exports during the next two or three years. The outlook is for a resumption this spring of an economic upswing which should be strong enough to produce a real GNP growth for 1972 of about 7 percent, as compared to an estimated 4 percent in 1971. Beyond 1972 the annual real growth rate until 1975 is expected to be close to 10 percent, with increasing emphasis on the systematization of Japan's production and distribution processes.

Currency Shifts: A Competitive View

Supplier [1]	Percent change [2]	Market share [3]
Australia (dollar)		
United States	— 7.9	25.5
United Kingdom	0.0	21.2
Japan	+ 7.6	12.7
Germany	+ 4.6	6.9
Canada	— 7.4	3.9
Italy	— 1.0	2.1
Hong Kong (dollar)		
United States	— 7.9	13.2
Japan	+ 7.6	23.8
United Kingdom	0.0	8.6
Germany	+ 4.6	3.7
Switzerland	+ 4.5	2.9
Italy	— 1.0	1.5
Japan (yen)		
United States	—14.4	29.5
Canada	—14.0	4.9
Germany	— 2.8	3.3
United Kingdom	— 7.1	2.1
France	— 7.1	1.0
Switzerland	— 2.9	0.9
Korea (won)		
United States	+15.5	29.5
Japan	+35.0	40.8
Germany	+31.2	3.4
France	+25.4	2.6
United Kingdom	+25.4	1.7
Netherlands	+28.8	1.2
Taiwan (dollar)		
United States	0.0	30.3
Japan	+16.9	38.1
Germany	+13.6	3.3
United Kingdom	+ 8.6	1.6
Canada	+ 0.5	1.1
Switzerland	+13.5	0.9

[1] Major suppliers of industrial goods.

[2] Percent change since May 1, 1971, in local cost of supplier currency.

[3] In percent, 1970; for Taiwan, the figures are based on foreign exchange data and show a higher U.S. share of imports than figures based on Taiwan customs data.

As a consequence, there should be an increasing market in Japan for U.S. high-technology equipment and systems engineering products. Also the increasingly affluent Japanese will demand a better and diversified diet, which can be provided through imports of foods and feedstuffs that the United States is in a position to supply in abundance.

In terms solely of the new price relationships, however, it is in other countries of the region, where the United States competes with Japanese and European suppliers of machinery and equipment, that more significant changes are possible. Especially important gains can be expected in the non-Commonwealth countries. In most of these countries, all of which maintained parity with the dollar, both the United States and Japan have large overall market shares. (The accompanying table reflects an earlier devaluation of the Korean won on June 28, 1971, but the rate in relation to the dollar was not changed during the December realignments.)

U.S. can regain ground

For example, in Korea, Taiwan, and the Philippines, the U.S. share averages about 30 percent, with the Japanese share being somewhat higher. The even larger U.S. shares of past years, partly due to U.S. aid funding, have been gradually eroded mainly by Japan, and the theoretical 17 percent price advantage now obtained by U.S. suppliers should help recover some of the lost ground. This should be particularly true in major industrial and mining projects in these developing countries, including Indonesia and Thailand.

Specifically, in Korea, which

ranks as the third largest U.S. market in the area, despite some recent slippage in the overall U.S. market share our exports have performed well. Last year, U.S. total exports were up by 6 percent and if the volatile item of military shipments is excluded, sales to Korea rose by twice this rate.

The Korean Government, however, recently adopted more restrictive import licensing regulations and announced its intention of holding 1972 imports to the 1971 level of $2.3 billion. Overall import demand should expand after 1972, but percentage rates of increase will be far less than in recent years.

The marked price advantage which the United States now has in Korea, where Japan holds an impressive two fifths share of the import market, is therefore especially timely, and should increase the competitiveness of U.S. suppliers in such fields as electrical machinery, agricultural machinery, construction and mining equipment, chemicals, and scientific, controlling, and measuring instruments.

Good opportunities

In Taiwan, where the Government projects an 8.5 percent annual real growth in GNP over the decade of the 1970s, U.S. nonmilitary exports last year increased 13 percent even though Japan continues to command a larger overall market share. The new price relationships should offer good market opportunities over the next two to three years for the following U.S. export categories: pumps, office equipment, textile finishing machinery, machine tools and accessories, quality control instruments, construction equipment, materials handling equipment, hotel supplies, and food processing equipment.

Similarly in the Philippines, Indonesia, and Thailand, the developmental needs of these countries indicate an extensive list of product areas where U.S. suppliers should do better in competition with Japanese as well as European producers. Such a list would include road building and construction equipment; mining, logging, and sugar mill machinery; telecommunications equipment; transport equipment; and agricultural tractors.

In the Commonwealth countries whose currencies followed the revaluation of sterling, the United Kingdom is one of the three main foreign suppliers, along with Japan and the United States, excluding the special case of Mainland China as a supplier to Hong Kong. However, in Malaysia, Singapore, and Hong Kong, Japan is the No. 1 supplier, while the United States leads in Australia and the U.K. in New Zealand.

Generally, both the U.S. and Japanese market shares have been increasing in these countries, partly at the expense of the U.K. For the United States, the currency changes should thus have an especially favorable impact over the long run in four of the five countries (Hong Kong is the exception) where capital goods account for a major portion of U.S. exports. This should be true not only in terms of competition from Japan and the U.K., but also with respect to German and other European suppliers.

Australia, which accounts for nearly one billion dollars in annual U.S. sales, represents the second largest U.S. regional market. While the accompanying table is based on the new par value of the Australian dollar, as noted earlier, the actual market rate has been set 2¼ points lower. This does not affect the strong price advantage gained by U.S. suppliers in relation to third-country producers, but does narrow slightly the advantage with respect to Australian manufacturers.

Most competition, however, is with third-country producers, as Australia normally affords significant tariff protection when considered necessary, although this policy appears to be undergoing some gradual change.

As the principal competition for U.S. goods in the Australian market comes from the U.K., with over one fifth of the import market, the price advantage which the United States now has should enhance sales of a wide range of goods provided the margins of preference accorded British suppliers do not offset the advantages gained. These include medicinals and pharmaceuticals, toilet preparations, dyeing and tanning extracts, a variety of plastics, rubber manufactures, paper and paperboard, textiles, iron and steel, and other metal manufactures.

Largest returns

The largest returns, however, should be reflected in the machinery and transportation equipment field where the British are the principal competitors. The U.S. position should be improved in such areas as construction and excavating equipment; internal combustion engines; agricultural, mining, and textile machinery; office and printing equipment; motor vehicles, tractors, and railway equipment.

In sum, as a result of the currency appreciation of major U.S. competitors, the long-term competitive position of U.S. suppliers in the Far East-Pacific region has been significantly strengthened in the areas of machinery, equipment, and other industrial products. Over time, both individual sales and the obtaining of contracts for larger projects should be assisted.

In Japan itself, general economic conditions may continue to be the more important factor in determining the overall U.S. export level, but the changed exchange rate together with the substantial lowering of Japanese trade barriers will nevertheless afford enlarged sales opportunities in a variety of specialized areas, ranging from capital equipment to consumer products for an increasingly affluent society.

New Rates Will Boost U.S. Sales In Near East-S. Asia

The December currency realignments significantly strengthen the U.S. competitive position in the Near East-South Asia area, affording opportunity and incentive both for existing suppliers to increase their sales volume and for new exporters to enter the market.

The new exchange rate relationships substantially reduce, and may in some instances eliminate, the large price differentials enjoyed by the United States' third country competitors — principally Japan, West Germany, the United Kingdom, France, and Italy—in this increasingly price conscious market area. Given the high regard in which U.S. goods are held, the United States is now in a favorable position to capture a larger share of this area's increasing imports. The reaction of the business members of a U.S. specialized trade mission visiting the area at the time sums it up nicely: "Now we can really sell."

In favor of U.S.

Relative prices have moved in favor of the United States in every country in the area, although in varying degrees (see accompanying tables). Several countries maintained the existing parities of their currencies with the dollar, thus leaving the local currency cost of dollars unchanged while raising the cost of third country currencies to the extent of the dollar's devaluation against those currencies. Included in this group are such key market countries as Iran, Lebanon, and Pakistan, and smaller markets like Jordan, Syria, and Ceylon.

Similar realignments (but by smaller margins) took place in India and Turkey, which kept their currencies pegged to the dollar but set new central rates which reduce the local currency cost of dollars by 2.9 percent and 6.7 percent, respectively.

The dollar was also favored in those countries which decided to maintain the par value of their currency in terms of gold—Saudi Arabia, Kuwait, Iraq, the lower Gulf states, and Cyprus—thus reducing by 7.9 percent the cost of dollars to their importers. As in India and Turkey, U.S. goods benefit from reduced local currency prices for dollars, while the prices of competitor currencies go up except for those of the United Kingdom and France, which also maintained their existing gold parity, and Italy, which revalued to a lesser extent.

U.S. goods have become more expensive in Israel, but to a lesser degree than those of the competitors. Israel devalued its currency on Aug. 22, 1971, to the new rate of US$1=4.20 Israeli pounds, increasing by 20 percent the local currency cost of dollars, then accomplished a further devaluation against other currencies by maintaining this parity with the dollar in the December realignments. Israel's devaluation, coupled with reduced tariffs on its products under its preferential trade agreement with the European Economic Community, will increase the competitiveness of Israeli products and give added impetus to the country's industrial growth. Israel's piggyback devaluation in December against U.S. competitors will help to offset tariff preferences accorded to EEC suppliers under the preferential agreement and should enable the United States to increase its share of this market. Higher exchange rates and tariff and import deposit restrictions are likely to limit consumer goods imports, but they will not affect U.S. exports of capital goods for industrialization, which continue to be in strong demand.

While we are in a much improved position vis-a-vis third countries, U.S. exporters should expect to make only minimal sales gains at the expense of local producers, even in those countries in which U.S. goods have become cheaper in terms of local currency under the new monetary relationships. India and Turkey are both industrializing fairly rapidly, and import protection afforded to domestic producers in support of this development will affect most of those U.S. export commodities which are likely to be sensitive to price changes. In the Near East countries which maintained their gold parities, there is little or no domestic production with which U.S. exporters must compete.

Actual impact

The actual impact of the currency realignments on U.S. sales to the area will also be affected by nonmonetary measures adopted by U.S. and third country exporters. Foreign competitors may move to narrow the U.S. competitive edge by reducing prices and absorbing at least part of the effect of dollar devaluation. Another key factor is whether U.S. exporters seek to increase sales volume by passing along to buyers the full price reductions from devaluation or decide to increase profit margins on existing sales levels. The latter may well occur with U.S. products which have a relatively unique position in world markets or for which the demand is highly inelastic.

This improvement in the U.S. competitive position comes at a time of expected sharp increases in import demand in many key markets of the area. After several years of deterioration in the U.S. trade position—the result mainly of U.S. price disadvantages—the trend of U.S. exports has been improving in the Near East in the last two years, and a banner year is expected in 1972. The oil producing states of the Gulf will receive well over $8 billion in hard currency revenues this year, and large increases are scheduled through 1975. Dollar revenues will be further increased by company payments to the producing countries to compensate them for reductions in revenue resulting from dollar devaluation. Since they all need rapid development (some starting almost from scratch), there will be larger markets for imported goods and services.

Most of the other countries in this region also have favorable foreign exchange earning factors working for them. This purchasing power will almost certainly result in significant increases in imports.

In South Asia the outlook is less promising. Major disturbances have impaired the economic position of the entire Indian subcontinent, and the most important consideration for U.S. exports in the immediate future is the uncertain level of U.S. aid to India and Pakistan. Any substantial increase in U.S. exports is likely to be in the form of relief goods. Nevertheless, there are possibilities for displacing third country suppliers in meeting the still large import requirements for industry and essential consumer needs.

U.S. products shipped under special programs (military, AID, PL-480, or food relief) account for a significant portion of U.S. exports to several area countries and will be unaffected by the currency realignments. Military exports are likely to continue at a high level to Israel, Iran, Saudi Arabia, and Turkey, with a few smaller shipments to other recipients. PL-480 may be heavy if poor crops continue in countries like Lebanon, Israel, Iran, Afghanistan, and Jordan. They will be very substantially higher if food aid to East Pakistan and India is stepped up.

Sales of highly sophisticated items such as computers are likely to be relatively insensitive to price changes in the limited market areas in which they are in demand, particularly Israel. Products incorporating advanced technology are much in demand in Israel, and U.S. sales there of electronic production equipment and industrial instrumentation should increase. For the area as a whole, U.S. civilian aircraft has almost become standard equipment for most airlines, and the already strong demand will get further support from the new U.S. price advantage.

Products most likely to benefit from lower U.S. prices include chemicals (especially pharmaceuticals), commercially sold food items, less sophisticated scientific instruments, internal combustion engines and other nonelectric power generating equipment, textile machinery, pumps, valves, and compressors. Markets for chemicals are centered mainly in those countries fairly well along in industrialization programs—for example, India, Pakistan, Iran, Turkey, Israel, and to a lesser extent Saudi Arabia and Kuwait—while commercially sold food items find outlets mainly in Near East countries. In the past, price has been a general problem in making U.S. products competitive in this area and the realignments will be of substantial help.

Currency Shifts: A Competitive View

Supplier[1]	Percent change[2]	Market share[3]
India (rupee)		
United States	— 2.9	29.3
Canada	— 2.5	7.1
United Kingdom	+ 5.4	6.7
Germany	+10.2	6.5
Japan	+13.4	4.6
Italy	+ 4.3	1.8
Iran (rial)		
United States	0.0	13.0
Germany	+13.6	20.7
Japan	+16.9	12.0
United Kingdom	+ 8.6	9.7
France	+ 8.6	4.6
Italy	+ 7.5	4.1
Israel (pound)		
United States	+20.0	22.4
United Kingdom	+30.3	15.5
Germany	+36.3	12.0
Italy	+29.0	5.3
Netherlands	+33.9	4.9
Japan	+40.3	4.3
Saudi Arabia (riyal)		
United States	— 7.9	17.8
Japan	+ 7.6	9.8
Germany	+ 4.6	9.8
United Kingdom	0.0	7.2
Italy	— 1.0	4.4
Netherlands	+ 2.8	4.4
Turkey (lira)		
United States	— 6.7	19.4
Germany	+ 6.0	18.5
United Kingdom	+ 1.3	9.9
Italy	+ 0.3	7.9
Switzerland	+ 5.9	5.0
France	+ 1.3	3.6

[1] *Major suppliers of industrial goods.*

[2] Percent change since *May* 1, 1971, in local cost of supplier currency.

[3] In percent, 1970; for Iran, 3-21-70—3-20-71.

A number of U.S. products which are less sensitive than others to price changes and which have been consistent sellers throughout the area will now enjoy a further advantage which should result in an improvement in the U.S. market share. These include heating and cooling equipment, construction and earthmoving machinery, mechanical handling equipment, mining machinery, and telecommunications equipment. U.S. sales of consumer durables, including automobiles and vehicle spare parts, may also benefit from price reductions in selected markets—particularly Lebanon, Saudi Arabia, Iran, Kuwait, and Israel—in which we have seen sales slipping away to European and Japanese competitors in recent years.

Aside from the sale of goods, a large element producing dollar revenues for U.S. firms in the Near East-South Asia area is in engineering and construction work. Since most government contracts are awarded on the basis of public bids, U.S. firms have often been outbid by competitors despite their acknowledged superior qualifications. This is one activity in which less expensive packages by U.S. firms resulting from dollar devaluation can give the United States a substantial advantage.

Western Europe: The Action Area, Now More Than Ever

At international sales meetings in U.S. corporate boardrooms the pressure is always heavy on the divisional manager for Western Europe. That pressure will increase in the months ahead because of the expectations that arise now out of clearly apparent new opportunities in this $14 billion market.

The recent appreciation of all major Western Europe currencies against the dollar should make U.S. exports substantially more competitive in Europe. Some should be able to crack that market for the first time.

Broader effect seen

At the same time, the currency realignment should help U.S. producers compete more effectively with their European counterparts in third-country markets, including those in the world's developing nations.

Of strong interest to U.S. exporters will be the probable effect of the recent changes in restoring the American competitive position that was eroded during the 1960s by several European devaluations, notably in the United Kingdom in 1967 and France in 1969.

Equally important, the multinational nature of the realignment has brought more realistic relationships among the various currencies, thereby removing much of the uncertainty that has inhibited trade in recent months. All this adds up to a significant boost in the long-range potential for increased U.S. sales in the "big ticket" Western European region.

In Western Europe generally the new rates give U.S. suppliers a price advantage over the domestic competition that is quite appreciable. Also, substantial revaluations in Germany, Switzerland and the Benelux nations give an additional sparkle to the attractiveness of these markets for American firms.

A point should be made here about the competitive advantage that the changes give the U.S. in two markets of special interest. These are the U.K. and Spain, where the U.S. already enjoys sizeable market shares of 13 and 19 percent, respectively, and where U.S. products need help to retain their competitive stance while these two countries are heading, in varying degrees, toward integration into the Common Market.

In all major European markets the U.S. suppliers will be in a stronger position to meet third country competition. This is particularly true with relation to German competition. In most of Europe today it is the Germans who hold the top import supplier position—in Italy, for example, they supply 20 percent of all imports and 30 percent of manufactured imports; in the Netherlands the figures are 27 and 35 percent.

In Germany itself, the largest Western European market for U.S. goods, the new rates should make it possible for Americans to improve a position which has been slipping in recent years. While the other principal suppliers have also gained some edge against local producers, their advantage is considerably less than the 12 percent advantage now gained by U.S. companies. For the Benelux nations, which hold a 22 percent share of the German market, it is only 1.8 percent. For the four other top suppliers—France, Italy, the U.K., Sweden—the advantage is in the 4 to 6 percent range.

It should be noted here that some of this shift dates from May 1971—when the German mark was allowed to float and approximated the degree of appreciation that has now been established—rather than from December.

Export prospects in Germany for U.S. suppliers are expected to improve particularly in these fields: chemicals; paper manufactures; metal products; office machinery; equipment for the metalworking, textile, paper, glass and printing industries; heating and cooling equipment; materials handling equipment; pumping equipment; electrical equipment; measuring and testing equipment; and home-entertainment products.

In Britain, with the appreciation of the pound sterling in terms of the dollar, certain U.S. products have acquired a significant competitive edge against locally-made merchandise. The export potential for price-sensitive goods, such as chemicals, is improved.

A principal advantage being gained in the U.K. market through the currency revaluations is the enhanced position of U.S. products vis-a-vis the major competitor, Germany, whose currency now costs the British 4.6 percent more.

American exports of some nonelectrical and electrical machinery and professional and scientific equipment should be facilitated. In 1970, the last full year for which data are available, the U.S. held 13 percent of the U.K. import market while Germany accounted for 6.1 percent. Incomplete data for 1971, however, indicate that the U.S. share has been declining, due partly to dock strikes in this country, while that of Germany (and other EEC countries) has been increasing. The new currency relationships could help significantly in recovering lost ground.

Consumer goods buoyant

The most buoyant area in U.K. expenditures in the past year—and likely to remain the most active this year—is that of consumer expenditures. Traditionally the U.K. has acquired most of its imports in this area from other European countries, getting only a small quantity from the U.S. With the new price advantage, this seems to be the time for U.S. manufacturers of consumer goods to take a hard look at the possibilities for expanding these sales in the United Kingdom.

Improvement of the U.S. competitive position is particularly opportune during this period when the U.K. is moving toward full membership in the Common Market. This entry will undoubtedly have important effects on the entire U.K. economy.

In France the revaluations of the German mark, the Benelux currencies and the lira, combined with the direct effects of the dollar devaluation, should make U.S. goods more competitive.

France is the third largest U.S. market in Western Europe. In 1970 the U.S. was France's third ranking supplier—after Germany and Belgium-Luxembourg, and slightly ahead of Italy—and accounted for about a tenth of total French imports.

With a real economic growth expected to rise nearly 6 percent annually until the mid-1970s, the overall demand picture in France will be highly favorable for U.S. export promotion. Following an exceptional 29 percent increase in U.S. export sales to France in 1970, U.S. exports only held steady in 1971, even though total French imports rose substantially.

Opportunities abound, but are particularly promising for such price-sensitive products as chemicals, paper pulp, paperboard, copper, and industrial components. Although price is often not the primary consideration in the purchase of technologically-advanced products, U.S. exports of machinery should also be facilitated by the price advantage being obtained by American manufacturers.

The continuing French drive to restructure, enlarge and modernize industry and selected service sectors will present opportunities for sale of sophisticated U.S. products such as electronic data processing and telecommunications equipment, instruments, equipment for the steel and electronics industries, hotel equipment and materials handling equipment. The French Government's emphasis on infrastructure projects will enhance prospects for construction machinery exports.

Currency Shifts: A Competitive View

Supplier [1]	*Percent change* [2]	*Market share* [3]
Belgium-Luxembourg (franc)		
United States	—10.4	8.8
Germany	+ 1.8	23.3
France	— 2.7	17.1
Netherlands	0.0	14.6
United Kingdom	— 2.7	5.8
Italy	— 3.7	3.8
France (franc)		
United States	— 7.9	9.9
Germany	+ 4.6	22.1
Belgium-Luxembourg	+ 2.8	11.2
Italy	— 1.0	9.2
Netherlands	+ 2.8	5.9
United Kingdom	0.0	5.1
Germany (mark)		
United States	—12.0	11.0
France	— 4.4	12.7
Netherlands	— 1.8	12.2
Italy	— 5.4	9.9
Belgium-Luxembourg	— 1.8	9.5
United Kingdom	— 4.4	3.9
Italy (lira)		
United States	— 7.0	10.3
Germany	+ 5.7	19.8
France	+ 1.0	13.2
Netherlands	+ 3.8	4.3
Belgium-Luxembourg	+ 3.8	3.8
United Kingdom	+ 1.0	3.8
Netherlands (guilder)		
United States	—10.4	9.8
Germany	+ 1.8	27.1
Belgium-Luxembourg	0.0	16.9
France	— 2.7	7.5
United Kingdom	— 2.7	5.7
Italy	— 3.7	4.3

[1] Major suppliers of industrial goods.
[2] Percent change since May 1, 1971, in local cost of supplier currency.
[3] In percent, 1970.

U.S. exporters are now in a better position to arrest the decline in their share of the Italian market, which resulted largely from the intensive competition of Italy's EEC partners. Their share of the market rose to over two fifths as the U.S. ratio fell to one tenth.

Shipments from this country should increase for those items which already compete with Italy's major trading partners. The following products would appear to offer significant opportunities: plastics, drugs, paper products, piston engines, office machinery, pumps, valves and compressors, materials handling equipment, telecommunications and data transmission equipment, photo and scientific instruments.

Potential in chemicals

Chemicals, especially plastics, provide one of the leading potential growth areas for trade in the seventies. This sector is targeted for a high rate of investment by both Government and private industry.

Consumption of chemicals has leveled off, but ENI, the National Hydrocarbon Agency, is highly optimistic about future growth. Imports of chemical products from the United States increased 25 percent to $170 million in 1970 and are holding steady. Pacesetters for growth in this industry are polymers and monomers, and specialty products, including pharmaceutical raw materials and pesticides.

Belgium for many years operated a dual foreign exchange system, maintaining both a free and an official market. Commercial transactions were cleared through the official market. Shortly after the Aug. 15 U.S. measures, Belgium decided to float the franc in the official market and it gradually rose until it was almost 10 percent over par by the middle of December. After the Dec. 18 decisions of the Group of Ten the Belgians established the franc at a rate representing an appreciation of 11.6 percent in terms of the dollar.

In 1970 imports from the U.S. increased 30 percent to nearly $1 billion and the U.S. market share rose by a point to 8.8 percent. For the first nine months of 1971, however, Belgian imports from the United States failed to increase and

Currency Shifts: A Competitive View

Supplier [1]	Percent change [2]	Market share [3]
Spain (peseta)		
United States	—7.9	18.9
Germany	+4.6	12.6
France	0.0	10.0
United Kingdom	0.0	7.1
Italy	—1.0	5.2
Japan	+7.6	3.1
Sweden (krona)		
United States	—7.0	8.7
Germany	+5.7	18.9
United Kingdom	+1.0	13.8
Denmark	—0.4	7.7
Norway	0.0	5.8
Netherlands	+3.8	4.5
Switzerland (franc)		
United States	—11.9	8.5
Germany	+0.1	30.0
France	—4.4	12.1
Italy	—5.3	9.4
United Kingdom	—4.4	7.8
Austria	—1.7	4.5
United Kingdom (pound)		
United States	—7.9	13.0
Canada	—7.4	7.5
Germany	+4.6	6.1
Netherlands	+2.8	5.1
Sweden	—0.7	4.1
France	0.0	4.1

[1] Major suppliers of industrial goods.
[2] Percent change since May 1, 1971, in local cost of supplier currency.
[3] In percent, 1970.

the U.S. market share declined. The general pattern of Belgium's imports from the United States has changed little in recent years, with about two thirds consisting of non-agricultural products.

Equipment sales seen

The emphasis given to investment in Belgium's Third Economic Plan, the 1972 budget, and the 1970 Economic Expansion Law offer increased opportunities for U.S. equipment sales. The Third Plan provides for a high level of public infrastructure development, promising a market for a variety of items ranging from construction machinery to classroom equipment. Equipment for consumer services such as quickfood service, automated laundry and dry-cleaning plants, and carwash facilities appears to have bright prospects in view of the generally tight labor situation.

Germany, France and the Netherlands, in that order, are the primary suppliers of Belgium-Luxembourg, followed by the United States and the United Kingdom. The advantages from the currency realignment will be greatest with respect to Germany, a major competitor in machinery, industrial equipment and chemicals, and the Netherlands.

In the Netherlands U.S. exports have attained a significant competitive edge against Dutch goods in their domestic market as a result of the appreciation of the guilder in terms of the dollar. The export potential is strong for machinery, tools and organic chemicals.

Combined factors a boon

U.S. export gains should be particularly pronounced in those areas where Germany has been a traditional supplier because of the combination of U.S. exports being cheaper and German exports being somewhat dearer in the Dutch market.

The U.S. market share in the Netherlands has been stable for many years at around 10 percent while Germany's share of the market, as already noted, is about 27 percent. France and the U.K., with no revaluations of their own currencies, also enjoy an improved competitive position in this market but they will both remain at a certain disadvantage compared to the United States.

Since the Netherlands has a relatively small domestic market for capital goods, most of her specialized needs are imported. Therefore, most U.S. gains in this area due to cheaper export prices will be at the expense of third-country suppliers.

The Netherlands is currently combating serious wage and price inflation. Economic growth will be conditioned by the Government's monetary and fiscal policies. Private consumption is expected to continue to rise appreciably.

The depreciation of the dollar by 7.9 percent against the Spanish peseta should result in a gain in the U.S. market share of Spanish imports. Most U.S. exports do not compete with Spain's domestic manufactures.

Prospects for many items

Chief competitors for Spain's market for manufactured goods are the EEC countries, the United Kingdom, Switzerland, and Japan, which together with the United States have accounted for about 88 percent of Spain's imports in recent years. Weighted by their respective market shares, the currencies of the chief competitors have appreciated against the dollar by an average of 11 percent. Although part of the price advantage the U.S. has gained through devaluation will be offset by tariff preferences granted to the EEC countries under the Spain-EEC Preferential Trade Agreement, the competitiveness of many U.S. products should be enhanced.

Among those products which encounter stiff competition from other suppliers and for which U.S. sales prospects should be strengthened are chemicals, telecommunications equipment, heating and cooling machinery, engines and turbines, and steam power boilers.

Spain's Third Economic and Social Development Plan, covering the period 1972-1975 projects a high level of economic growth, with average annual increases in overall imports of 14.5 percent. The plan envisages import increases for foodstuffs of 7.5 percent; for raw materials and semi-manufacturers of 15 percent; for capital goods of 13.5 percent; and for manufactured consumer goods of 23.2 percent.

While consumer goods now constitute only a small proportion of total imports, this category will undergo the fastest growth and weigh more heavily in the total in future years. The U.S. has not in the past been a significant supplier of these goods to Spain, but traders should be alert to new sales opportunities made possible by U.S. devaluation.

With a market share of 8.5 percent, the U.S. ranks fourth as a supplier to the Swiss market, after Germany, France and Italy. Germany's share is an impressive 30 percent. U.S. consumer items are in much greater demand in Switzerland than in Europe generally, comprising 20 percent of U.S. exports. They now have a significant price edge. Especially popular with the Swiss are marine equipment, outdoor sports equipment, hardware and men's and women's clothing.

Machinery in demand

The continuing Swiss labor shortage, along with the need for modernizing its industry and infrastructure is expected to sustain the demand for labor-saving machinery and automated equipment. The expansion of the Swiss highway network to accommodate an ever-increasing number of vehicles provides a good market for construction equipment. Furthermore, Switzerland has virtually no import restrictions in the non-agricultural sector.

American exports to Sweden, largest of the four Nordic markets, will gain a substantial advantage from the recent currency revaluations. In general, high technology items appear to offer the best opportunity. Even though such products are not very price-sensitive, the market situation is highly promising.

The chief competitor in Sweden —Germany—supplies 32 percent of Swedish machinery imports. U.S. products will enjoy a price advantage that should be sufficient to give many types of U.S. machinery a competitive edge. Equipment which should benefit includes data processing machinery, electronic components, metalworking machinery, electronic testing and production equipment, industrial process controls, graphic arts equipment, and a wide range of other sophisticated equipment.

A smaller but significant price advantage will be gained against Swedish equipment imports from the United Kingdom, Denmark, Norway and Finland. These four countries combined supply 31 percent of the Swedish machinery market. The revaluation should also stimulate U.S. farm commodity exports—many of them highly sensitive to price variations —which account for 13 percent of U.S. sales to Sweden. Other products which stand to benefit are U.S. industrial chemicals and primary metals.

The outlook for U.S. exports is further brightened by the prospect that Sweden will emerge from the 1970-71 economic recession this year. The gross national product —which did not register any real gain in 1971—is expected to increase by 3.5 percent in 1972. Particularly promising is the immediate outlook for capital equipment sales, since Swedish industrial outlays are expected to rise at an above-average pace.

The recent currency revaluations will likewise stimulate U.S. exports to the three other Nordic markets —Denmark, Norway, and Finland.

In Denmark, U.S. exporters now enjoy an improved competitive position relative to German, Swedish and British suppliers of non-electrical machinery. U.S. sales of such equipment in Denmark increased by about 25 percent in 1971, and a further gain in the U.S. share of the market for high-technology goods is expected this year.

U.S. exports to Norway in 1972 will reap large benefits from recent oil discoveries in the Norwegian sector of the North Sea. Goods and services to develop these resources will be purchased largely from U.S. manufacturers.

The outlook for U.S. exports to Finland is also bright. Finnish Government efforts to stimulate investment, combined with the gains conferred by the revaluations, should bring a significant increase in U.S. sales this year and an expanding share of the market.

Moderately Favorable Effect Seen On Sales To E. Europe

Devaluation of the dollar in international markets vis-a-vis other currencies is likely to have a modestly favorable effect on U.S. export opportunities in the USSR and in the East European countries.

These countries may earn more dollars for their exports to the United States. They will also pay somewhat less for dollar goods as against goods imported from West European countries. Such developments should enhance for Eastern Europe the attractiveness of U.S. goods.

Prices, however, usually are not the most important factor influencing Eastern Europe's purchasing decisions. Other conditions of trade—for example, availability of credit, shipping costs, and the volume of East European countries' own exports to particular western countries—frequently affect determinations about the sources from which to import specific products. In some instances, political considerations also are a factor governing imports.

Nonetheless, the area's desire to modernize domestic industrial facilities often gives an edge to American products. The successful attainment of East European goals to expand output and raise productivity often appears more assured with advanced equipment and technology of U.S. origin. This situation will not be affected by the currency revaluations.

Tie to gold retained

The USSR, Hungary, Poland, Czechoslovakia, and Romania have now announced adjustments of their currencies which continue the formal pegging to gold and do not change the price of gold in terms of their currencies. Thus, they have changed upward their relationships to the U.S. dollar, but have devalued vis-a-vis most West European currencies.

Effective Dec. 20, the Soviet Union adjusted upward the ruble-dollar exchange rate by imposing an 8 percent bank charge on all conversions from dollars into Soviet currency. The effect was to charge $1.20 for a ruble, as compared with the old rate of $1.11. Effective Dec. 24, the USSR announced a formal change in its dollar exchange rate. The new rate was set at .829 ruble, down from .90 ruble, to $1.

The Hungarian National. Bank has set a new rate of 27.60 forints to $1, replacing both the old tourist rate of 28.50 forints to $1 and the former rate applied to other transactions of 29.97 forints to $1. The rate change went into effect Dec. 20, but has not yet been formally announced.

Effective Dec. 22, Poland announced a revaluation of the zloty in relation to other currencies, based on the unchanged gold parity of the zloty. The new average rate was fixed at 22.08 zlotys, down from 24 zlotys, to $1.

On Dec. 23, both Czechoslovakia and Romania announced new exchange rates in relation to the dollar, effective the same day. Czechoslovakia set a rate of 6.55 crowns, down from 7.14 crowns, to $1; Romania fixed the rate of 5.53 lei, down from 6 lei, to $1.

All of these rate changes reflect an approximately 8 percent devaluation of the dollar.

Demand for machinery, transportation equipment, and recent technology continues strong in Eastern Europe—especially in the petro-chemical, automotive, and electronic areas, in which the United States is in the technological forefront.

In addition, there is a heavy demand for textile machinery, heating and cooling apparatus, and machine tools. The USSR, which has been modernizing its textile mills, and has bought much equipment from West Germany and the United Kingdom, needs more. The Soviet Union and Romania are in the market for more heating and cooling equipment, although their purchases of such equipment have expanded rapidly in recent years. Western machine tools continue to be in demand in all East European countries.

Eastern Europe, and especially the USSR, also need finished steels, such as plates and cold sheets that are used in the manufacture of automobiles and consumer durables, organic and inorganic chemicals, and plastic materials. Shipments of chemicals and plastics to Eastern Europe have been steadily growing.

Poland is particularly interested in buying more equipment of high technical quality for the expansion of crude oil processing and rubber and synthetic fiber production. This involves the purchasing of catalytic cracking equipment for the Plock oil refinery, as well as for several specialized petrochemical departments in that plant; equipment for a new oil refinery at the Blachownia Chemical Works; machinery for propylene-ethylene pyrolysis; and equipment for the Olsztyn Automobile Tires Works and the Debica Rubber Works.

Poland also is in the market for licenses and equipment for microelectronics, including integrated circuits, for licenses and equipment for production of farm and industrial tractors and for peripheral equipment for computers including coders, disc and tape memories, equipment for computers, includ- and displays. In addition, Poland wants to buy equipment for light industries and for food processing, including slaughterhouses.

Tourist facilities

Throughout the East European area vigorous programs are afoot to develop tourism. They engender heavy investments in road networks and tourist resort areas.

In Romania, demand is growing for modern equipment in the hotel, restaurant, and catering industry to meet the increasing needs of tourists and businessmen. There is a special need for automated kitchen, laundry, air conditioning, and swimming pool equipment. Equipment for hair-dressing salons and all types of cleaning and polishing machines suitable for hotels also are needed.

In Hungary, tourism is growing rapidly. The government plans to build an additional 10,000 first class hotel rooms over the next five years. Most of the new construction is scheduled for Budapest and the Lake Balaton area.

Expansion of tourism in Hungary is creating a demand for better hotel and restaurant facilities. Foreign exchange is said to be available for imports from the West of equipment for the mechanization of kitchen and service facilities, air conditioning and ventilation equipment, and swimming pool gear.

The East European market should be viewed by U.S. exporters as a growth market worthy of serious consideration and investigation. Many western developed countries are making considerable efforts at penetrating that market. Britain, West Germany, and Japan are particularly active. There are good trade opportunities in Eastern Europe and in the USSR. Moreover, the climate for expansion of U.S. trade with that area is now substantially better than it has been for many years.

International Business Reports

DISC: A Handbook for Exporters. Published by the U.S. Treasury Department. 56pp. 40¢.

Recent legislation has made export corporations called DISCs (Domestic International Sales Corporations) eligible to defer Federal tax on 50 percent of export earnings until distributed to shareholders.

The DISC itself is not subject to U.S. income tax. Its shareholders are treated as receiving one half of the DISC's earnings currently, whether or not actually distributed. The remaining half may be retained by the DISC and reinvested in export activities without liability for Federal income tax.

This handbook is intended as an aid in understanding the benefits and requirements of a DISC, and describes Internal Revenue Service procedures for electing DISC status. The IRS will follow the rules and procedures set forth in the handbook until regulations are issued.

Write: Superintendent of Documents, GPO, Washington, D.C., 20402 (Stock No. 4800-0194).

Policy Aspects of Foreign Investment by U.S. Multinational Corporations. Published by U.S. Department of Commerce. 86pp. Available on request.

The U.S. economy derives important benefits from foreign investment in overseas plants by U.S. multinational corporations, according to this Commerce Department staff study. Direct investment helps protect jobs in the United States and benefits the U.S. trade account and balance of payments.

The study notes that most U.S. firms invest abroad to preempt or protect domestic and foreign markets from foreign competition. It is the first part of a comprehensive project to investigate the impact of U.S. multinational investment on the U.S. balance of payments, technology transfers, and domestic employment, as well as the effects of foreign direct investment controls on the operations of the multinational corporations. Other parts of the project will quantify the financial, commercial, and employment activities of U.S. multinational corporations.

Write: Office of International Investment, Bureau of International Commerce, U.S. Department of Commerce, Washington, D.C., 20230.

Peterson Report

"The United States in the Changing World Economy," a review and analysis by Peter G. Peterson, is now being released to the public.

The study by Peterson, White House Assistant for International Economic Affairs—recently nominated by President Nixon as Secretary of Commerce—was prepared at the request of the President as background for the formulation of U.S. international economic policy in the 1970s. It was first presented to the President and to the President's Council on International Economic Policy, headed by Peterson, in April 1971. Later it was used to brief Members of Congress and other officials and some trade groups.

Subsequently President Nixon approved a series of specific Council programs.

The study is in two volumes: 1) a personal overview by Peterson of the origins and possible policy implications of the new world economy; 2) statistical background material used in the Presidential briefings.

For copies, at $3.25 for both volumes, write: Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Calendar For World Traders

Feb. 10—Chicago — International Trade Club luncheon, Subject DISC. LaSalle Hotel.

Feb. 10—New York—Overseas Automotive Club luncheon, Summit Hotel, noon.

Feb. 15—Morristown, N.J.—Meeting of World Trade Assn. of New Jersey, Governor Morris Inn, noon.

Feb. 15—New York—FCIB Hardware-Automotive and Allied Trades Group luncheon meeting, Advertising Club. 12:30.

Feb. 16—Chicago—Chicago Midwest Credit Management Assn. meeting, Bismarck Hotel.

Feb. 16—New York—Day-long seminar on use of international trade statistics, Room 305, 26 Federal Plaza, 9:30 a.m. Sponsor: Commerce Field Office.

Feb. 16—Kansas City—Seminar for associate offices, Commerce Field Office, 1-5 p.m.

Feb. 17—Kansas City—DISC seminar, Commerce Field Office, 9:30 a.m.

Feb. 17—New York—FCIB Drug, Chemical and Food Export Club luncheon, Advertising Club, 12:15 p.m.

Feb. 17—Omaha—DISC Seminar, New Tower Motel, 4 p.m. Sponsor: Commerce's Kansas City Field Office.

Feb. 18-19—Atlanta—Georgia International Trade Assn. workshop, Georgia State U. Sponsor: Commerce Field Office.

Feb. 22—New York—International Executives Assn. luncheon on trade with USSR, Eastern Europe, Mainland China, St. Regis-Sheraton, noon.

Foreign Trade Opportunities

These trade opportunities are based on reports received from the U.S. Foreign Service by the Business Opportunities Staff and other units of the Bureau of Domestic Commerce (BDC), U.S. Department of Commerce, Washington, D.C. 20230. The commodities in which foreign firms have interest are indicated by the five-digit numbers and commodity classifications which are from the Standard Industrial Classification (SIC) Manual and the Numerical List of Manufactured Products, 1967 Census of Manufacturers, used extensively by Government and industry.

U.S. firms should be aware that the listing in Commerce Today *of opportunities to trade in specific commodities and technical data does not necessarily imply approval of their export by the Department of Commerce pursuant to the Export Administration Act of 1969. Applicable export licensing regulations must be followed.*

Every effort is made to include only firms or individuals with good reputations. However, the Department cannot be responsible for any trade relations.

The mark (●) indicates that this trade opportunity is a request for bids by a foreign government agency. A (★) at the end means that additional information may be borrowed by U.S. firms from the individual division of BDC. To avoid delays, requests for loan material should specify the country, commodity and foreign government agency.

WTD indicates that a World Trade Directory Report containing financial and business background information on the foreign firm is available for $2 from the U.S. Department of Commerce, BIC-924, Washington, D.C. 20230.

Direct Sales

Specific foreign firms have expressed interest in direct purchases of the products below. See also the "Agencies" listing.

Miscellaneous agriculture

01920—FINLAND—*Rooted cuttings of:* geranium, poinsettia, chrysanthemum. *Greenhouse seeds of:* tomato, cucumber. HANKKIJA, Keskusosuusliike, Attn: Mr. Jorma Laakko, Sales Mgr. (importer, dist., retailer), Salomonkatu 1, 00100 Helsinki 10. WTD 9/71.

Textile goods

22940—GERMANY—All types of processed textile mill waste, such as cotton waste, linters, wool and wool waste, wool clips, hosiery waste, flax waste, staple fibre, staple fibre waste, synthetics. Rohtex AG fuer Textilrohstoffe (dist., mfr., exporter), 41-47 Nuerburgstrasse, D-7000 Stuttgart 60, Baden-Wuerttemberg. WTD 1/72.

22950—NETHERLANDS— Cloth-backed PVC (PVC leathercloth), printed, glitter and plain black and white shining, Leppers Fabrieken NV., Attn: Mr. P. J. C. M. Feddema (importer, mfr.), P.O. Box 3, Dieren. WTD 12/71.

Apparel, accessories

23872—SWITZERLAND — Ladies' apparel belts, other novelty boutique items. Walter Meyer (importer, dist.), Dolderstrasse 2, P.O. Box 152, 8030 Zurich. WTD 1/72.

Sawmills, planing mills

24210 — GERMANY — Cut lumber. Cremer, Johann & Cie. KG (importer, dist.), 47 Hauptstrasse, 502 Frechen. WTD in prep.

24212—ITALY—Dressed lumber (American varieties). Correspondence requested in Italian. Michele Lucentini (importer, dist.), Via Vittorio Veneto 19, 91022 Castelvetrano (Trapani). WTD 12/71.

Millwork, veneer, plywood, prefabricated structural wood items

24314—CANADA—Wood door lines—swing type doors in conventional sizes, such as 2'8" x 6'8" and 3' x 7' in 1¾" thickness; for residential construction, similar doors 1⅜" thickness. Wm. Stairs Son & Morrow, Ltd. (dist.), 305 Baig Blvd., P.O. Box 96, Moncton, New Brunswick. WTD in prep.

Paper mills

26216 — PARAGUAY — Mimeograph paper, all woodpulp. Copyfil S.R.L. (importer, dist., agent), Calle Oliva 243, Asuncion. WTD in prep.

Converted paper, paperboard items

26414—PARAGUAY — Adhesive tape, cellophane. Copyfil S.R.L. (importer, dist., agent), Calle Oliva 243, Asuncion. WTD in prep.

Paperboard containers, boxes

26540—UNITED KINGDOM — Frozen food containers made of waxed paper or board. Frigicold Ltd., Attn: R. B. Wainwright, Dir. (mfr., exporter), 10 Manchester Sq., London, W.1. WTD in prep.

Industrial chemicals

28185—COLOMBIA—Hydrocarbon and fluorocarbon propellants. Envasados Aerosol de Colombia (importer, dist., mfr.), Carrera 50 No. 21-42, Apartado Aereo 90052, Bogota. WTD in prep.

28191—COLOMBIA — Ammonia. Monomeros Colombo-Venezolanos S. A., Attn: Dr. Luciano Elejalde, Gen. Mgr. (importer, dist., mfr.), Calle 37 No. 8-47, Apartado Aereo 17972, Bogota. WTD 10/71.

28194—COLOMBIA — Phosphoric acid. Monomeros Colombo-Venezolanos S. A., Attn: Dr. Luciano Elejalde, Gen. Mgr. (importer, dist., mfr.), Calle 37 No. 8-47, Apartado Aereo 17972, Bogota. WTD 10/71.

Synthetic materials

28213 — NETHERLANDS — Synthetic thermoplastic resins. Direct exclusive representations. D. M. & C. Watering N.V.; Attn: Mr. E. F. H. van Santen (importer, dist., agent), 400 Herengracht, P.O. Box 3448, Amsterdam. WTD 2/71.

28214—NETHERLANDS — Thermosetting resins. Direct exclusive representations. D. M. & C. Watering N.V.; Attn: Mr. E. F. H. van Santen (importer, dist., agent), 400 Herengracht, P.O. Box 3448, Amsterdam. WTD 2/71.

28214 — NETHERLANDS — Thermoplastic sheet specialities other than cast acrylic sheets. Exclusive sales arrangements for Netherlands, Common Market, England. Casolith N.V., Attn: Mr. M. Tinga (importer, dist., mfr.), Achter de Hoven 116, Leeuwarden. WTD in prep.

28219—INDIA—Chemicals for manufacture of anion exchange resin—chloro methyl ether (60 tons per yr.); chloro methylated styrene (15 tons per yr.). Specifications available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Requests quotations c.i.f. Calcutta. Bird & Co. (Pvt.) Ltd. Process Engineering Div. (mfr.), P.O. Box 46, Dakhindari, Calcutta 48. WTD 5/71.

28242—COLOMBIA—Acrylic fibers, tow, for textile use. Hilanderias Bogota S. A. (importer, dist., mfr.), Calle 12 No. 9-97 (Bosa), Apartado Aereo 17522, Bogota. WTD in prep.

Drugs

28341—BOLIVIA—Pharmaceutical preparations affecting neoplasms, endocrine system and metabolic diseases, for human use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, P.O. Box 6127, La Paz. WTD in prep.

28342—BOLIVIA—Pharmaceutical preparations acting on central nervous system and sense organs, for human use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosi 1156, P.O. Box 6127, La Paz. WTD in prep.

28343—BOLIVIA—Pharmaceutical preparations acting on the cardiovascular system, for human use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, P.O. Box 6127, La Paz. WTD in prep.

28344—BOLIVIA—Pharmaceutical preparations acting on respiratory system, for human use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, P.O. Box 6127, La Paz. WTD in prep.

28345—BOLIVIA—Pharmaceutical preparations acting on digestive or genitourinary system for human use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí, P.O. Box 6127, La Paz. WTD in prep.

28346—BOLIVIA—Pharmaceutical preparations acting on skin, for human use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, P.O. Box 6127, La Paz. WTD in prep.

28348—BOLIVIA—Pharmaceutical preparations affecting parasitic and infecting diseases for human use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, P.O. Box 6127, La Paz. WTD in prep.

28349—BOLIVIA—Pharmaceutical preparations for veterinary use. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, P.O. Box 6127, La Paz. WTD in prep.

Agricultural chemicals

● **28700—PARAGUAY**—Systemic insecticides 10,000 liters, packed in one-liter aluminum containers; carbamate base insecticides 10,000 liters, packed in 50-kilogram containers; toxic granules for control of leaf-cutter ants, 10,000 kilograms packed in 50-kilogram containers; insecticide, contact and ingestion, soluble phosphorous powder case, 10,000 kilograms, packed in 50-kilogram containers; organic fungicide, base of bisdithio zinc carbamate 5,000 kilograms, packed in 50-kilogram containers; fungicide, mixture of zineb and maneb, 5,000 kilograms, packed in 50-kilogram containers, and organic fungicide, base of trifenil tin acetate, 5,000 kilograms packed in 50-kilogram containers. Correspondence preferred in Spanish. Bid deadline Feb. 24. Tender No. 1. Bids should be submitted to the Directorate, Agricultural—Livestock Dept., National Development Bank-BNF, Asuncion. Specifications are available on a short-term loan basis to firms domiciled in the U.S. from the Chemicals, Petroleum and Rubber Division, BDC-712, U.S. Department of Commerce, Washington, D.C. 20230 ★(202-967-3910). A review copy is available at the Commerce Field Office, 11444 Federal Bldg., 450 Golden Gate Ave., San Francisco, Calif. 94102 ★(415-556-5868).

28711—COLOMBIA — Fertilizer materials. Monomeros Colombo-Venezolanos S. A., Attn: Dr. Luciano Elejalde, Gen. Mgr. (importer, dist., mfr.), Calle 37 No. 8-47, Apartado Aereo 17972, Bogota. WTD 10/71

28790—GERMANY—Insecticidal, fungicidal, herbicidal preparations for agriculture. UCB Chemie GmbH. (importer, dist., agent), Huettenstrasse, Box 80, 5159 Sindorf Bez. Koeln. WTD 12/71.

28790—GERMANY—Technical grades of herbicides, insecticides, acaricides, fungicides, special pesticides ready for use. Direct purchase & agency also for EFTA, European Common Market. GECHEM Gesellschaft fuer Produktion u. Vertrieb chemischer und chemisch-technischer Erzeugnisse mbH (importer, dist., exporter), 1 Tullastrasse, D-6800 Mannheim, Baden-Wuerttemberg. WTD 1/72.

Chemical products

28930 — PARAGUAY — Stencil inks. Copyfil S.R.L. (importer, dist., agent), Calle Oliva 243, Asuncion. WTD in prep.

Lubricating oils and greases

● **29920—AFGHANISTAN**—The Royal Afghan Ministry of Public Works invites foreign suppliers' bids for lubricating oil, lubricants and greases of various types and S.A.E. grades, in these approximate amounts (in U.S. gallons and lbs.): 20,350 gallons lubricating oils, 10,350 gallons industrial lubricants and oils and 3,700 lbs. of greases. Tender No. I/FY/72, bid deadline Feb. 26. For specifications and further details, contact Eng. M. Noury, President, Road Construction and Maintenance Dept., P.O. Box 577, Kabul; or through the American Embassy using the following address: c/o Commercial Sec., Kabul—Department of State, Washington, D.C. 20521.

Fabricated rubber products

● **30600 — BURMA** — V-Belts, various sizes, 2,210 units. Tender No. MEIC/B.R/13(T) 92 (ML) 71-72, bid deadline Feb. 23. Chairman, Union of Burma Railway Board, Bogyoke Aungsan St., Rangoon. Specifications available from Chemicals, Petroleum and Rubber Division, BDC-712, U.S. Dept. of Commerce, Washington, D.C. 20230 ★(202-967-5287). A review copy will also be available at the Department of Commerce Field Office, 11444 Federal Bldg., 450 Golden Gate Ave., San Francisco, Calif. 94102 ★(415-556-5868).

30698—BOLIVIA — Rubber stationary goods; rubber toys. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, P.O. Box 6127, La Paz. WTD in prep.

Plastic products

30790 — UNITED KINGDOM — Deep freeze plastic containers. Frigicold Ltd., Attn: R. B. Wainwright, Dir. (mfr., exporter), 10 Manchester Sq., London, W.1. WTD in prep.

30792—AUSTRALIA — Lead sheeting clad on both sides with plastic material for use as component in acoustic barriers. Sugar Research Institute, Attn: Mr. D. Macey (agent), Nebo Rd., Mackay, Q. 4740. WTD in prep.

Leather tanning, finishing

31114 — NETHERLANDS — Suede leather, all kinds. Thas N.V., Attn: A. J. Schapendonk, Gen. Mgr. (dist., mfr., exporter), 92-94 Eerste Zeine Oost, or P.O. Box 92, Waalivijk. WTD 12/71.

Flat glass

32111 — FRENCH GUIANA — Glass for use in making jalousy windows; lengths of 10 centimeter high; sheets of 3m x 2m for use in window & sliding glass doors. Correspondence requested in French. SOFEGU (mfr.), 9 km Route de Rémire, Montjoly, B.P. 440, Cayenne. WTD 1/72.

Pottery, related products

● **32600—INDIA**—Supply of insulators and pole-line hardware for 98 mile, 132 KV single circuit transmission lines. Tender No. IDA/HSEB/6, bid deadline March 30. Chief Engineer (Planning & Construction), Design Directorate, Haryana State Electricity Board, Shop-Cum-Flat No. 6, Sector 17-E, Chandigarh. Tender documents available from above address upon receipt of demand draft drawn on any Indian bank in favor of the Accounts Officer, Haryana State Electricity Board, Chandigarh. Financing by IDA credit.

● **32600—INDIA**—Supply porcelain and glass insulators, in quantities of 2,500,000 for each type and for both small and large sizes. Tender No. CDN/ENQ/137, bid deadline Feb. 25. Director General, Supplies and Disposals, Jeevantara Bldg., Parliament St., New Delhi. Tender documents available at India Supply Mission, Washington, D.C. 20008. IBRD financing.

32610—JAMAICA — Sinks, tubs, toilets for household use. Quotations: c.i.f. Kingston for 250 each. Brochures requested. Lloyd's Property Development Ltd., Attn: Lloyd Gibson (real estate development and construction), 15d Old Hope Rd., Kingston 5. WTD in prep.

32690—SWITZERLAND — Art, decorative, novelty pottery ware: vases, lamp bases, figures, plaques, ash trays, novelties for interior decoration. Walter Meyer (importer, dist.), Dolderstr. 2, P.O.B. 152, 8030 Zurich. WTD 1/72.

Concrete, gypsum, plaster products

32720 — CZECHOSLOVAKIA — License for building parts and units, door and window frames (also of aluminum). Works of Slovak National Uprising (mfr.), Ing. Milan Boska, chief of production, Ziar nad Hronom.

Abrasive, asbestos, nonmetallic mineral products

32933—NETHERLANDS — Thermal insulating materials; acoustical ceilings. Direct purchase and/or agency for Common Market, Eastern Europe. N.V. Internationale Technische Handelsmaatschappij v/h Fa. F.J. Cleton Attn: Mr. J. Pijper (importer, dist., exporter/installer), 15 George Stephensonweg, or P.O. Box 160, Vlaardingen. WTD 12/71.

32962 — NETHERLANDS — Thermal insulating materials; acoustical ceilings. Direct purchase and/or agency for Common Market, Eastern Europe. N.V. Internationale Technische Handelsmaatschappij v/h Fa. F.J. Cleton, Attn: Mr. J. Pijper (importer, dist., exporter/installer), 15 George Stephensonweg, or P.O. Box 160, Vlaardingen. WTD 12/71.

Steel mill products

33133 — ARGENTINA — Ferrosilicon. Correspondence requested in Spanish. FUN-CO., SA (mfr.), Luis M. Campos 4844, Villa Insuperable (B)—Pdo. La Matanza, Pcia. de Buenos Aires. WTD in prep.

Rolling, drawing, extruding of nonferrous metals

● **33500 — ARGENTINA** — Aluminum Cable, PVC covered, four specifications, 3,540,000 meters; Armoured Underground Cable, two specifications, 183,000 meters; Bare Aluminum Conductor, one specifications, 500,000 meters. Tenders 3167, 3171 and 3172 respectively. Bid deadlines Feb. 23. Specifications and conditions available from SEGBA, Balcarce 184, Oficina Compras Exterior, Buenos Aires at 50 Argentine Pesos each.

● **33500—ARGENTINA** — Copper cable, PVC insulated, 82,000 meters, two specifications, seven-strand; 1,200,000 meters, one specification, single strand for low tension aerial lines, tender 3168. Aluminum cable, bare, 1,000,000 meters, two specifications, seven-strand; 40,000 meters, one specification, 19-strand for three phase 220/380 V, 50 cycle aerial lines, tender 3169. Armored underground cable 120,600 meters aluminum, four specifications; 3,500 meters copper, two specifications, tender 3170. Bid deadline each tender March 1. Specifications and conditions available from SEGBA, Balcarce 184, Oficina Compras Exterior, Buenos Aires at 50 Argentine Pesos each.

● **33500 — INDIA** — Supply of G.S.S. groundwire (7/2.50 mm of 110 KGF/mm^2 quality) and accessories for 132 KV single circuit (157 K.M. length) transmission lines. Tender No. IDA/HSEB/A/2. Bid deadline March 28. Contact Chief Engineer (Planning & Construction) Design Directorate, Haryana State Electricity Board, Shop-cum-flat No. 6, Sector 17-E, Chadigarh. Tender fee: $13.33. Cost of the documents may be remitted in the form of Demand Draft drawn on any Indian Bank in favor of Accounts Officer, Haryana State Electricity Board, Chandigarh, India.

● **33500 — SINGAPORE** — Supply and delivery of transmission and distribution equipment: (1) 12.7/22 KV paper insulated power cables and accessories; (2) overhead L.V. cables; (3) pilot and telephone cables. Tender No. E.E. 949.9/0. Bid deadline March 6. Contact Chief Electrical Engineer, Public Utilities Board, City Hall, St. Andrew's Rd., Singapore 6.

● **33500—THAILAND**—Supply of control cable, and switchboard wire. Tender No. A 016. Bid deadline Feb. 29. Contact Foreign Purchasing Section, Procurement Division, Supply and Procurement Department, Electricity Generating Authority of Thailand, Nonthaburi.

33523 — GERMANY — Aluminum foil, 7,000 kg. Specifications in German available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Robert Bosch GmbH (importer, mfr.), Zentraleinkauf-Einkaufskoordination, P.O. Box 50, D-7000 Stuttgart 1, Baden-Wuerttemberg. WTD 7/71.

33526 — GERMANY — Drawn aluminum tube, 70 tons. Specifications in German available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Robert Bosch GmbH (importer, mfr.), Zentraleinkauf-Einkaufskoordination, P.O. Box 50, D-7000 Stuttgart 1, Baden-Wuerttemberg. WTD 7/71.

Primary metal industries

33990—CZECHOSLOVAKIA—License or know-how on all novelties in all kinds of heat treatment of steel. United Steel Works (mfr.), Ing. Oleg Engel, Kladno.

Metal cans

34110—COLOMBIA—Small size aluminum aerosol cans. Envasados Aerosol de Colombia, Attn: Marcos Rodriguez, Mgr. (importer, dist., mfr.), Carrera 50 No. 21-42, Apartado Aereo 90052, Bogota. WTD in prep.

Cutlery, hand tools, hardware

34231 — TAIWAN — Socket, flat and adjustable wrenches. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

34232—GERMANY—Agricultural tools, ploughs, etc. Braun-Maschinen, Friedr. Braun KG (importer, dist., mfr.), 137 Friedrich-Ebert-Str., 44 Muenster. WTD in prep.

34232—TAIWAN—Chisels. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

34291—COLOMBIA—Motor vehicle hardware. Ferreteria el Crisol Ltda. (importer, dist., retailer), Calle 12 No. 15-85, Bogota. WTD in prep.

34291—GERMANY—Automobile hardware. Metallwerk Frese GmbH. (importer, dist., mfr.), 23 Moltkestrasse, 5672 Leichlingen. WTD 12/71.

34292—GERMANY — Furniture fittings, accessories, also decorative furniture fittings; kitchen fittings, accessories, also for built-in kitchens (all of the above items also pre-packed for self-service). Direct purchase & agency. Adolf Haefele (importer, dist., mfr.), 70-74 Freudenstaedter Strasse, D-7270 Nagold, Baden-Wuerttemberg. WTD 12/71.

Heating, plumbing fixtures

34310—JAMAICA—Kitchen sinks, preferably aluminum, and ancillary fittings. Quotations: c.i.f. Kingston for 150 sinks. Brochures requested. Lloyd's Property Development Ltd., Attn: Lloyd Gibson (real estate construction and development), 15d Old Hope Rd., Kingston 5. WTD in prep.

Fabricated structural metal products

34421—PHILIPPINES—Doors, steel, accordion-type, for installation in power house of thermal plant. Heights Construction, Inc., Attn.: Edward R. Lara, Gen. Mgr. (contractor), 95 Halcon St., Sta. Mesa Heights, Quezon City, P.O. Box 323, Greenhills Post Office, Rizal. WTD in prep.

34492—BRAZIL—Zoo cages for wild animals, birds; prefabricated metal buildings. Instituto de Pesquisas da Amazônia (government research institute), Gaixa Postal 478, 69000 Manaus, Amazonas.

34492—FRENCH GUIANA — Prefabricated aluminum houses. Correspondence requested in French. SOFEGU (mfr.), 9km Route de Rémire, Montjoly, B.P. 440, Cayenne. WTD 1/72.

34492 — GERMANY — Farm service buildings, metal. Braun-Maschinen, Friedr. Braun KG (importer, dist., mfr.), 137 Friedrich-Ebert-Strasse, 44 Muenster. WTD in prep.

Screw machine products

34521 — GERMANY — 250,000 pieces bolts; 120,000 pieces cap nuts; 200,000 pieces rivet bolts per year. Specifications in German available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Robert Bosch GmbH (importer, mfr.), Zentraleinkauf—Einkaufskoordination, P.O. Box 50, D-7000 Stuttgart 1, Baden-Wuerttemberg. WTD 7/71.

34521—TAIWAN—Rivets (other than aircraft). Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

Metal stampings

34610—UNITED KINGDOM—Ice cream scoops. Frigicold Ltd., Attn: R. B. Wainwright, Dir. (mfr.), 10 Manchester Sq., London, W.1. WTD in prep.

Engines, turbines

35190—GERMANY—Internal combustion engines. Schick, Anton (importer, dist., repair shop), 25-27 Glockenspitz, 415 Krefeld. WTD in prep.

Farm machinery

35225—ARGENTINA—Harvesting machinery, pull-out type. Requests technical specifications, price information. Dr. Carlos H. Zenzes (agricultural consultant), Casilla Correo 25, Rosario de la Frontera, Salta.

35228—CZECHOSLOVAKIA — Specialized equipment ("pig maternity ward") for 25-30 sows for pig breeding in sterile conditions; equipment includes incubators, special pens; all other modern equipment for pig raising. Specialized equipment for cattle raising, including breeding, modern feeding systems, etc. Unified Agricultural Cooperative, Mr. Josef Sustr, Male Chrastany 4, Posta Sedlec u Ceskych Budejovic.

Construction, mining, materials handling machinery, equipment

● **35300—SPAIN**—600 rail greasers, 7 ballast trains, 3 ballasting machines for Spanish Nation Railroad (RENFE). To be financed with World Bank loan. Bid deadline Feb. 24. Tender No., BIRF 50. Red Nacional de los Ferrocarriles Espanoles (RENFE), Direccion de Compras, Plaza de los Sagrados Corazones, 7, Madrid (16). Copy of tender documents (in Spanish) available for examination in Transportation Equipment Division/OBRA, Dept. of Commerce, Room 5091, 14th & "E" Streets, NW., Washington, D.C. 20230. ★(202-967-4816).

● **35300—SPAIN**—41 self propelled hydraulic cranes 2,500 kg capacity and 246 trailers for towing by cranes for Spanish National Railroad (RENFE). Bid deadline Feb. 18, Tender No. BIRF 53. Red Nacional de Ferrocarriles Espanoles, Direccion de Compras, Plaza Sagrados Corazones, 7, Madrid (16). To be financed by World Bank loan. Copy of tender documents (in Spanish) available for examination in Transportation Equipment Division, OBRA, Dept. of Commerce, Room 5091, 14th & E Streets, NW., Washington, D.C. 20230. ★(202-967-4816).

35360—GERMANY — Hoists, industrial cranes. Direct purchase & agency. Keller Baumaschinen GmbH (importer, agent), 54 Sternstrasse, 4 Duesseldorf. WTD in prep.

Metalworking machinery

35418—TAIWAN—Keyseating machines. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35421—TAIWAN—Bending, forming machines. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35440—VIET-NAM—Equipment required for assembling, testing distribution transformers from 10 up to 300 KVA capacities; electricity available: 380 V, three phases, four wires, 50 Hz.; all single phase transformers should be provided for 220 V, 50 Hz operation; rated capacity: 3,480 sets of all capacities. Quotations c.i.f. and c Saigon indicated separately. Specifications available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Electrical Equipment Manufacturing Co. (importer, dist., mfr.), 444 Hai Ba Trung, Saigon. WTD in prep.

35440—VIET NAM—Machinery, equipment for manufacture of wood screw hexagon bolts and nuts, and other types of machine screw. Annual production capacity: 300 metric tons hexagon bolts and nuts; 400 metric tons of various types of machine screw; 300 metric tons of wood screw. Quotations c.i.f. and c Saigon indicated separately. Tan Hung Ky Nghe Kim Khi Cong Ty (importer, dist., mfr.), 40 E Ngo Duc Ke, Saigon. WTD in prep.

35441 — TAIWAN — Metal-working punches, dies. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35451—TAIWAN—Pipe reamers, cutters. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35452 — TAIWAN — Pneumatic gages. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35453—TAIWAN—Toolroom specialties including levels, squares, sine bars, plates, flats, vises, etc. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35482 — TAIWAN — Portable power-driven hammers, impact wrenches, hacksaws, grinders; pneumatic drills. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35485—ARGENTINA—Crib or fence type wire weaving machines. Correspondence requested in Spanish. Rossi Hermanos S.C.A. (dist.), Av. de Mayo 453, Capitán Sarmiento, Provincia de Buenos Aires. WTD in prep.

Special industry machinery

● **35500—IRAQ**—Design, manufacture, supply, transportation, erection and testing of machinery and equipment for tire and tube factory. Bid deadline March 11. Secretariat of Tender Opening Committee, State Organization of Industrial Design and Construction, Ministry of Industry, Baghdad. Tender document can be purchased from the above Committee with a nonrefundable payment of $50 to the Accounts Department of the Committee.

35510—VIET NAM — Machinery and equipment for instant powdered whole milk production plant. Rated capacity: 1,300 kgs of finished product/hour. Quotations c.i.f. and c indicated separately. Specifications available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Cong Ty Sua Viet Nam (COSUVINA) (importer, dist., mfr.), 1 Vo Di Nguy (1st Floor) Saigon. WTD in prep.

35511—VENEZUELA—Filling, packaging, sealing machinery. Correspondence requested in Spanish. Alimentos Lacteos, C.A., Attn: Mr. José Rojas Salazar (mfr.), 2*a* Calle de La Yaguara, Edificio Alaca, Caracas. WTD in prep.

35513—PARAGUAY — Meat processing equipment, accessories to produce cooked, frozen meat, and byproducts. Ramon Bogarin Ayala (dist., mfr., retailer), Calle 25 de Mayo 1473, Asuncion. WTD in prep.

35513—PHILIPPINES—Coffee roasting equipment, fuel oil fired, capacity of 25 to 150 kilos of green coffee beans per batch. Michael A. Proulx (importer), P.O. Box 172, Greenhills, Rizal. WTD in prep.

35513—VENEZUELA—Poultry killing equipment, supplies. Correspondence requested in Spanish. La Constancia, S.A., Attn: Mr. Giovanni Clemente (poultry slaughterhouse), Puente Las Brisas, San Miguel, Petare, Caracas. WTD in prep.

35513—VIET NAM—Machinery, equipment for complete sardine canning plant. Rated capacity: 120,000 can of ¼ lb each per 8 hours/day. Raw fish materials: clupeoid types, 4″ to 10″ sizes. Quotations c.i.f. and c Saigon indicated separately. Dai Viet Thuc Pham Cong Ty (DAVITUCO) (importer, dist., mfr.), 237/6 Ly Thanh Nguyen, Cholon. WTD 7/71.

35520—COLOMBIA—Textile machinery, accessories, parts for same. Siman Hermanos (importer, dist., mfr.), Calle 30 No. 23-29, Apartado Aereo 471, Barranquilla. WTD in prep.

35522—INDIA—Thread warp mercerizing equipment including thread warp mercerizing machine and quilling machine. The Arvind Mills Ltd., Attn: Mr. J. K. Shah, Chief Chemist (mfr.), Railwaypura Post, Naroda Rd., P.B. No. 56 Ahmedabad 2. WTD 7/71.

35540—BRAZIL—Paper mill machinery for complete small paper mill. Instituto de Pesquisas da Amazônia (government research institute) Caixa Postal 478, 69000 Manaus, Amazonas.

35550—PARAGUAY—Complete set of printing equipment, accessories to produce daily newspaper, tabloid size, offset, 40 to 48 pages per copy, 30,000/40,000 copies daily. Specifications in Spanish available from Trade Opportunities Staff, BDC-584,. Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Intercom S.R.L. (importer, dist., agent), Casilla Postal 91, Asuncion. WTD in prep.

35590—VIET NAM—Machinery, equipment for complete motorcycles tires, tubes plant. Annual production capacity estimated at: 624,000 tires and tubes for motorcycles; 100,000 tires, tubes for scooters. Quotations c.i.f. and c Saigon indicated separately. Duy Tan Huu Han Cong Ty (DUTACO) (importer, dist., mfr.), 14 Ton That Dam (1st floor) Saigon. WTD in prep.

35591—PARAGUAY—One plant, complete, small or medium size, to produce alcohol from manioc or cassava. Dr. Elvio F. Fretes, Seccion Laboratorio, Ministerio de Industria y Comercio, Avenida España 477, Asuncion.

35591—VIET NAM—Machinery, equipment for manufacture of sodium sulphate, gypsum and hypochloric acid. Rated capacity: 4,300 metric tons of sodium sulfate, and 1,000 metric tons of hypochloric acid. Quotations c.i.f. and c Saigon indicated separately. Cong Ty Hoa Pham Tai Hap (COPHATA) (importer, dist., mfr.), 56 Nguyen Cong Tru, Saigon. WTD in prep.

35593 — CZECHOSLOVAKIA — Equipment for production of flexible drainage pipes (PVC, PE etc.) of 50, 65 and 90 mms diameters (pipes to be perforated); punching equipment for manufacturing plastic pipes (perforated) of PVC, PE, other materials; injection presses for plastics materials. Plastimat (mfr.), Jaroslav Pavlasek, Plastimat—Liberec, zavod Tachov, Tachov.

35595—ZAMBIA—Decortication machine for preparing cotton-seed for pressing to produce cotton seed oil on machine having capacity of up to 100 tons. Indeco Chemicals Ltd. (mfr.), P.O. Box 3750, Lusaka. WTD in prep.

General industrial machinery

● **35600—COLOMBIA**—Design, manufacture, transportation, supply and installation of 21 trailer-mounted diesel motor water pumps, with discharge valves and accessories for pumping stations, and 20 flow meters, destined for Block III, Stage I, South Sector, Atlantico Project No. 3. Tender No. 36-71; bid deadline Feb. 21. INCORA, Centro Administrativo Nacional-CAN, Oficina 503, Bogota. Specifications may be purchased from INCORA at the above address for 400 Pesos Colombian currency, first copy; and 40 Pesos each additional copy. These amounts will not be refunded The current rate of exchange is approximately 20.80 Pesos to $1.

● **35600—INDIA**—Two ammonia plant waste heat boiler circulation pump impellers. Tender No. GS/3043/71/D/10221; no bid deadline specified but quotations requested within one month of the receipt of its requirements. Write: N.K.A. Gireeshan, Senior Purchase Officer, The Fertilizer Corp. of India Ltd., P.O. Fertilizer Factory, Gorakhpur U.P. Specifications available on a short term loan basis to firms domiciled in the U.S. from the General Industries Division, BDC-772, U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-4317).

● **35600 — THAILAND** — Vertical and horizontal type water pumps, air compressors, and diesel generators. Tender No. EGAT-SK-T18; bid deadline March 1. Foreign Purchasing Section, Procurement Division, Supply and Procurement Dept., Electricity Generating Authority of Thailand, Nonthaburi. Tender documents will be available for free examination at Foreign Purchasing Section EGAT's office and can be purchased at $30 per copy (not refundable) from Acres Western Ltd., 555 Burrard St., Vancouver 1, British Columbia, Canada. Only tenders from suppliers in member countries of the International Bank for Reconstruction and Development and in Switzerland will be considered.

35612 — GERMANY — Vacuum pumps. Hamac-Hansella GmbH (dist., mfr.), P.O. Box 340, 406 Viersen. WTD in prep.

General industrial machinery

35613—TAIWAN—Submersible pumps. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35615—NETHERLANDS—High pressure piston pumps up to 10,400 PSI for water-spraying; also accessories. G. J. Kramp N.V. (importer, dist., agent), Burg. v.d. Zandestraat 9, P.O. Box 25, Varsseveld, Gelderland. WTD in prep.

35663 — TAIWAN — Universal joints, flexible couplings. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35673 — TAIWAN — Heating nozzles. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

35690—GERMANY—Labelling, marking machinery. REWO Reinhard Wolf GmbH & Co. KG (importer, dist., mfr.), 38 Rosenstrasse, 5 Koeln 1. WTD in prep.

35690—GERMANY—Labelling, marking machinery. Wolf Reinhard GmbH & Co. KG (importer, dist., mfr.), 38 Rosenstrasse, 5 Koeln. WTD in prep.

Office, computing, accounting machines

● **35700—INDIA** — Supply, installation and commissioning of a digital computer system at the Indian Institute of Technology, Madras. In respect of both hardware and software facilities the computer system should correspond to modern practice and be capable of augmentation at a future date. Tender forms and specifications are available, on payment of $2, from the India Supply Mission, 2536 Massachusetts Ave., NW., Washington, D.C. 20008. The bid deadline is March 1. Ref. CDN/ENQ/143.

35731—FRANCE—Peripherals for electronic data-processing equipment. Le Connecteur Fauris (importer, mfr., agent), 81, rue d'Inkermann, 69–Lyon 6e. WTD in prep.

35791—PARAGUAY — Numbering and dating machines; staplers; perforators; check signers and endorsers; check protectors; cutting boards for trimming paper; postage meter machines; mail openers; mail scales; rotary card files; office supplies, devices. Copyfil S. R. L. (importer, dist., agent), Calle Oliva 243, Asuncion. WTD in prep.

Service industry machines

35853—NETHERLANDS — Automotive refrigeration equipment suitable for both mounting on trucks, in containers, etc., as well as for 220/330 V, 50 cycles A/C. Horos Technische Handelsonderneming (importer, dist.), Brinklaan 30; P.O. Box 38, Bussum. WTD 12/71.

35853—SURINAM—Cold storage plant for chilling and freezing of food, meat, fish. Unit would have storage capacity of from 500 to 1,000 cu. meters; preferably prefabricated facility or turnkey; must be fully tropicalized and capable of dependable operation under conditions of high heat, humidity. W. A. Moll Industrial & Trading Co. (importer, mfr., agent), Cornelis Jongbawstraat 34, P.O. Box 189, Paramaribo. WTD in prep.

35854—COLOMBIA—Compressor, compressor units (all refrigerants). Industrias Westell Ltda. (importer, dist., mfr.), Calle 12 No. 44-60, Apartado Aereo 4980, Bogota. WTD in prep.

35857—GERMANY—Evaporator plates (more than ten million per yr.). Specifications in German on loan from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Robert Bosch GmbH (importer, mfr.), Zentraleinkauf —Einkaufskoordination, P.O. Box 50, D-7000 Stuttgart 1, Baden-Wuerttemberg. WTD 7/71.

35857 — NETHERLANDS — Air-conditioning equipment for use in air ducts. Direct purchase and/or agency for Common Market, Eastern Europe. N.V. Internationale Technische Handelsmaatschappij v/h Fa. F. J. Cleton, Attn: Mr. J. Pijper (importer, dist., exporter/installer), 15 George Stephensonweg, or P.O. Box 160, Vlaardingen. WTD 12/71.

35892 — NETHERLANDS — Machines, utensils, equipment, etc., for professional cleaning and maintenance. Direct purchase and/or agency for Common Market, England, Scandinavian countries. RHOWAX Interieur-Hygiene, Attn: R. A. J. Krebaum, Sales Mgr. (agent), 35 Henegouwerweg, Waddinxveen. WTD 12/71.

Electric transmission, distribution

● **36100 — BURMA** — Supply transformers for Myanma Export-Import Corp. (Import Division). Tender No. 4 (T)/EL—ESB(E)/71-72, bid deadline Feb. 29. Specifications available from Office of the Controller of Stores, Electricity Supply Board, Rose Bank Road, Ahlone, Rangoon, at $1.90 per set plus postage of $.95.

● **36100—COLOMBIA**—Supply of three graph frequency meters of 60 hertz, and 180 rolls of metallized paper for same. Tender No. DC-06-72, bid deadline March 24. Terms and specifications available, at 50 Colombian pesos per copy (19.92 pesos equals $1), from Expresas Publicas de Medellin, Section de Importaciones, Edificio Miguel de Aguinaga No. 607, Medellin, Colombia.

Special Action

Each of the following trade notices is deemed to rate the special attention of American manufacturers and suppliers by the U.S. Commercial Officers overseas.

28341—AFGHANISTAN — Pharmaceutical preparations for human use. Soofizadeh Ltd. (importer, dist., agent), Malik Asghar Sq., Kabul. WTD 9/71.

28345—AFGHANISTAN — Antibiotic preparations for human use. Soofizadeh Ltd. (importer, dist., agent), Malik Asghar Sq., Kabul. WTD 9/71.

28347—AFGHANISTAN — Vitamin. nutrient and hematinic preparations for human use. Soofizadeh Ltd. (importer, dist., agent), Malik Asghar Sq., Kabul. WTD 9/71.

28440—SWITZERLAND— Wishes to represent U.S. producer of prescription and special toilet preparations and cosmetics for skin treatment and protection, lip preparations, vitamin cosmetics, other similar preparations for treatment or care of allergies, infant toilet preparations. Requests offers from manufacturers only. Galenica Vertretungen AG; Attn: E. Rüfenacht (dist., mfr.), Untermattweg, 3000 Bern. WTD 12/71.

35551—SWITZERLAND— Wishes to represent U.S. producer of printing trade machinery, related equipment, instruments, letterpress, offset, web offset, flexographic, proofing presses. Requests offers from manufacturers only. FAG S.A., Attn: H.R. Nyffeler, Mng. Dir. (dist., mfr., agent), 7 rue de Genève, 1001 Lausanne. WTD 10/71.

35731—FRANCE — Seeks direct purchase of electronic computing equipment. Société Nationale des Chemins de Fer Français (SNCF—French National Railways) 105 blvd. Suchet, Paris 16e. Attn: Service Informatique Mr. Vosluisant.

● **36100 — CYPRUS** — Supply, erection, commissioning and maintenance for twelve months of two 3.3 KV switchboards, two 415 volt switchboards, and extensions and modifications to existing switchboards and a control board associated with the fifth and sixth 30 MW units at Moni Power Station. Tender No. 1979/13, 1240/12780/71, bid deadline April 10. Tender documents may be obtained on or after Feb. 7 from The General Manager and Chief Engineer, The Electricity Authority of Cyprus, P.O. Box 4506, Nicosia, upon receipt of $51 for a set of four documents. A brief description of contract is available from the Power and Electrical Equipment Program, BDC-776, U.S. Department of Commerce, Washington, D.C. 20230. ★(202-967-5585). A review copy will be available at the Department of Commerce Field Office, 11444 Federal Bldg., 450 Golden Gate Ave., San Francisco, Calif. 94102. ★(415-556-5868).

● **36100 — INDIA** — Supply of 132 KV, 800 Amp., 3500 MVA minimum oil circuit breakers. Tender No. IDA/PSEB/2, bid deadline March 21. Chief Engineer (Construction), Design Directorate (Substation), Punjab State Electricity Board (PSEB), The Mall, Patiala. Tender documents are available from the above address upon receipt of a crossed bank draft of $13.75 in favor of the Assistant Accounts Officer (Preaudit), PSEB, Patiala. Financing by IDA credit.

● **36100—INDIA**—Supply of 66 KV, 132 KV and 220 KV auto transformers. Tender No. IDA/PSEB/5, bid deadline April 5. Chief Engineer (Construction), Design Directorate (Sub-station), Punjab State Electricity Board (PSEB), The Mall, Patiala. Tender documents are available from the above address upon receipt of a crossed bank draft of $13.75 in favor of the Assistant Accounts Officer (Preaudit), Suburban Division, PSEB, Patiala. Financing by IDA credit.

● **36100—INDIA**—Supply of 220 KV air blast circuit breakers. Tender No. IDA/PSEB/6, bid deadline April 10. Chief Engineer (Construction), Design Directorate (Sub-station), Punjab State Electricity Board (PSEB), The Mall, Patiala. Tender documents are available from the above address upon receipt of a crossed bank draft of $13.75 in favor of the Assistant Accounts Officer (Preaudit) Suburban Division, PSEB, Patiala. Financing by IDA credit.

● **36100—INDIA**—Supply of 66 KV, 132 KV and 220 KV current transformers. Tender No. IDA/PSEB/4, bid deadline April 4. Chief Engineer (Construction) Design Directorate (Sub-station), Punjab State Electricity Board (PSEB), The Mall, Patiala. Tender documents available from the above address upon receipt of crossed bank draft of $13.75 in favor of the Assistant Accounts Officer (Preaudit), Suburban Division, PSEB, Patiala. Financing by IDA credit.

● **36100—INDIA**—Supply of sixty nine 33 KV transformers. Tender No. IDA/HSEB/A/1, bid deadline March 20. Chief Engineer (Planning and Construction), Design Directorate, Haryana State Electricity Board, Shop-Cum-Flat No. 6, Sector 17-E, Chandigarh. Tender documents are available at a cost of $4.11 a set, from the above address against a demand draft drawn in favor of the Accounts Officer, Haryana State Electricity Board, Chandigarh. Financing by IDA credit.

● **36100—INDIA**—Supply of twenty seven 132 kv. air blast type circuit breakers complete with compressor plants; thirteen 132 kv., ten 66 kv. and fifty 33 kv. low oil content type circuit breakers. Tender No. IDA/HSEB/4, bid deadline Feb. 28. Chief Engineer (Planning and Construction), Design Directorate, Haryana State Electricity Board, Shop-Cum-Flat No. 6, Sector 17 E, Chandigarh. Tender documents are available from the Chief Engineer at a cost of $13.33 per set against a demand draft on any Indian Bank in favor of the Accounts Officer, Haryana State Electricity Board, Chandigarh. Financing of equipment by IDA credit.

• **36100—INDIA**—Supply of twenty seven 220 kv. and one hundred twenty 132 kv. current transformers; three 220 kv. and eighteen 132 kv. single phase potential transformers; and three 220 kv. and thirty six 132 kv. lightening arresters. Also transformer spare parts for five years operation. Tender No. IDA/RSEB/No. 1, bid deadline March 6. Superintending Engineer (Projecto), Rajasthan State Electricity Board, New Hotel Bldg., Jaipur-6 Rajasthan. A copy of specification is available for review only, not for loan, in the Power and Electrical Equipment Program, Room 5898C, U.S. Department of Commerce, Washington, D.C. 20230. Financing by IDA credit.

• **36100 — NEW ZEALAND** — Transformers: one 200 MVA 3-phase Transformer bank, consisting of three 66 MVA 220/66/11 KV 1-phase three-winding transformers with natural circulation and cooling (ONAN), and on-load tap-changers. Tender No. 572, bid deadline Feb. 29. Specifications available on a short-term loan basis to firms domiciled in the U.S. from Power and Electrical Equipment Program, BDC-776, U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-5585).

• **36100—SENEGAL**—Supply materials and electrical equipment for construction of thermal installation for electricity production. This to include new unit of 27.5 MW extension to the central power station, existing at the "Cap des Biches." Tender JH/MD No. /71/S. Adm. 18634, bid deadline March 29. Compagnie des Eaux et Electricite de l'Quest Africain, 28-30, Rue Vincens, B.P. 93, Dakar. Specifications available for review only from Power and Electrical Equipment Program, BDC-776, U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-5585). Copies of bids available from Ministere du Developpement Industriel, Direction de l'Energie et de l'Hydraulique, Building Administratif, Dakar at $36.50 per copy.

• **36100—SINGAPORE**—Supply 22/6.6 KV Power Transformers and Accessories; and 600/1000 volts paper insulated power cables. Tender No. EE. 949.9/0, bid deadline Feb. 21. Chief Electrical Engineer, Public Utilities Board, City Hall, St. Andrew's Rd., Singapore 6. Conditions available for review only from Power and Electrical Equipment Program, BDC-776, U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-5585). Tender documents available for $335 from aforementioned Singapore Utilities Board.

• **36100 — TAIWAN** — Supply of 300 units of 14.4 KV, 200 Amp., single phase oil switches and 10 sets of 14.4 KV, 400 amp., three phase oil switches for capacitor bank switching; 35 sets of Vac response type and 100 sets of time response type automatic control switches for capacitor bank. Invitation No. FL2A-4030P1(L), bid deadline Feb. 28. Central Trust of China, Purchasing Dept. 49. Wu Chang St. Sec. 1, Taipei. A specification is available for review only, not for loan, at the Power and Electrical Equipment Program, Room 5898C, BDC, U.S. Department of Commerce, Washington, D.C. 20230. Asian Development Bank loan financing.

• **36100—THAILAND**—Supply of seven sets of 12 KV indoor metal-clad switchgear with insulated busbars and complete with protective relay and metering panels ready for commission. Tender No. MEA-PSD-269, bid deadline March 7. Purchases and Stores Dept., Metropolitan Electricity Auth., 121 Chakpetch Rd., Bangkok 2. A copy of specifications is available on short term loan from the Power and Electrical Equipment Program, BDC-776, U.S. Dept. of Commerce, Washington, D.C. 20230 ★(202-967-5585).

• **36100—TRINIDAD and TOBAGO**—Supply following equipment in quantities or measurements indicated in parenthesis: Tender No. 2376, insulator pins (3,000); Tender No. 2377, line fuse connectors (5,000); Tender No. 2378, 66 KV isolators (8); Tender No. 2379, tubular busbars (495'); Tender No. 2380, clamps and connectors for tubular busbars (160); Tender No. 2381, stranded aluminum alloy conductor (100,000'); Tender No. 2382, stranded aluminum alloy conductor (50,000'); Tender No. 2383, compression joints (500); Tender No. 2384, ball ended hooks (2,000); Tender No. 2385, overhead line dead end clamps (1,500); Tender No. 2386, 33 KV metering current transformer (2); Tender No. 2387, photo electric control units (3,000). Bid deadline for all foregoing is Feb. 18. Purchasing Officer, Trinidad and Tobago Electricity Commission, 63 Frederick St., Port of Spain, Trinidad, W.I. Specifications available on a short-term loan basis to firms domiciled in the U.S. from Power and Electrical Equipment Program, BDC-776, U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-5585).

• **36100—VENEZUELA**—Seven unitary control panels, equipped for control, instrumentation, registry, metering and relays; miscellaneous electronic equipment for control room of the power plant; and miscellaneous electronic equipment for the control house in the distribution yard. EDELCA, bid deadline March 7. Documents available from Secretaria de la Direccion de Obras de Guri, EDELCA, Ciudad Comercial Tamanaco, Avda La Estancia, N. 14, 4 piso, Caracas.

36112 — TAIWAN — Electric frequency meters. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

36122 — ARGENTINA — Power transformers of low and medium capacity. Correspondence requested in Spanish. FUN-CO, S.A. (mfr.), Luis M. Campos 4844, Villa Insuperable (B)—Pdo. La Matanza, Pcia. Buenos Aires. WTD in prep.

Electrical industrial apparatus

36215 — TAIWAN — Electric motors. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

Household appliances

36343—PARAGUAY — Electric knives; electric carving sets; 110 volts. Kube S.A. (importer, dist., retailer), Calle Palma y Ayolas, Asuncion. WTD in prep.

36427—SWITZERLAND—Novelty wall, table lamps, decorative design. Walter Meyer (importer, dist.), Dolderstr. 2, P.O. Box 152, 8030 Zurich. WTD 1/72.

Electric lighting, wiring equipment

36440 — GERMANY — Insulating materials for electronic industry. Direct purchase & agency. Westmetall Stokvis GmbH & Co. KG (importer, dist.), 1-5 Hunsrueckstrasse, 56 Wuppertal 2. WTD 1/72.

Radio, television receiving sets

36514—PORTUGAL—Hi-fi and stereo apparatus, related equipment. ONDEX-Representações Electronicas, Lda. (importer, agent), Campo das Cebolas 39, Lisbon 2. WTD 10/71.

Communication equipment

• **36600—MEXICO** — Supply electronic control systems for complete modernization of traffic signal system; systems are remote, semi-remote, TV-monitored, block-controlled, etc. Bids to be called for this year. City Director of Traffic Engineering, at following address, wishes complete information on available systems, currently manufactured by U.S. manufacturers: Ing. Rafael Cal y Mayor, Director de Ingenieria de Transito y Transportes, Departamento del Distrito Federal, Plaza de la Constitucion y Pino Suarez, Mexico, D.F.

• **36600—TAIWAN:** Supply of 80 automatic highway crossing gates, 110 highway alarm signals and associated electrical and track circuit equipment. Bid deadline Feb. 22. Tender Number 4027(H); Central Trust of China, Purchasing Dept., 49 Wuchang St., Sec. 1, Taipei. Financing by World Bank loan. Copy of invitation to bid and specifications available for review in Transportation Equipment Div./OBRA, Room 5091, U.S. Dept. of Commerce, 14th and E Sts., NW., Washington, D.C. 20230, ★(202-967-4816).

• **36600—TAIWAN:** Supply of station interlocking equipment. Bid deadline Feb. 21. Tender No. IB2B-4030(W); Central Trust of China, Purchasing Dept., 49 Wuchang St., Sec. 1, Taipei. Copy of tender documents available for review only in Transportation Equipment Division/OBRA, Room 5091, U.S. Department of Commerce, 14th and E Sts., NW., Washington, D.C. 20230, ★(202-967-4816).

36621—SPAIN — Commercial, industrial electronic communication equipment. Suministros Eléctricos Maldonado (importer, dist.), Fernando el Católico, 63, Madrid (15). WTD 11/71.

36622—SPAIN—Radio, television broadcast equipment. Suministros Eléctricos Maldonado (importer, dist.), Fernando el Católico, 63, Madrid (15). WTD 11/71.

36623 — SPAIN — Intercommunication equipment. Suministros Eléctricos Maldonado (importer, dist.), Fernando el Católico, 63, Madrid (15). WTD 11/71.

36624—SPAIN—Electronic navigational aids. Suministros Eléctricos Maldonado (importer, dist.), Fernando el Católico, 63, Madrid (15). WTD 11/71.

Motor vehicles, equipment

37111—COLOMBIA—Checker taxicabs, or equal, limosine model, or similar taxicabs. Corporacion Financiera del Transporte, Attn: Dr. Luis Augusto Murcia, Mgr. (Financing company), Calle 37 No. 7-43 Piso 2, Apartado Aereo 10733, Bogota.

37112—COLOMBIA—Heavy trucks made by Ford, Mack, White and others. Corporacion Financiera del Transporte, Attn: Dr. Luis Augusto Murcia, Mgr. (Financing company), Calle 37 No. 7-43 Piso 2, Apartado Aereo 10733, Bogota.

37141—BOLIVIA—Parts, accessories for passenger cars, trucks, busses, including replacement parts. Correspondence requested in Spanish. Andin Ltda. (importer, dist.), Calle Potosí 1156, Casilla 6127, La Paz. WTD in prep.

37141—GERMANY—Automobile accessories, parts of all kinds. Metallwerk Frese GmbH. (importer, dist., mfr.), 23 Moltkestrasse, 5672 Leichlingen. WTD 12/71.

Ship building, repairing

37313—COLOMBIA—One ocean cargo vessel. Specifications available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Mauricio Posada & Asociados Ltda. (business consulting services), Apartado Aereo 12311, Bogota. WTD in prep.

37313—VIET NAM—Stern otter trawler for fishing, shrimping. Tonnage: 140-160 tons gross—100-120 tons net. Quotations c.i.f. and c Saigon indicated separately. Khanh Hoa Ngu Nghiep Cong Ty (importer, dist., mfr.), 138 Quoc Lo L, Nha Trang (Central Vietnam), Liaison Office: 157 Pasteur, Saigon. WTD in prep.

37320—BRAZIL—Motorboats and sailboats (24) for racing only. Inflatable life-saving boats (23). ENEPE Associados Representações e Comércio Ltda. (importer, dist., agent), Rua Martim Francisco 414, Santa Cecilia, São Paulo (SP). WTD in prep.

Railroad equipment

● **37400 — IRAN** — Iranian State Railways invite tenders for the supply of springs, hooks and couplers for railroad cars. Tender Notice 67, 71 and 1575/50. Bid deadline March 6. Tender documents may be obtained from Iranian State Railways, Purchasing Office, Tehran, Iran for $5.28.

● **37400—SPAIN**—Thirty railway passenger cars for electric trains. Financed by World Bank loan. Bid deadline Feb. 22. Tender Number BIRF 48. Red Nacional de los Ferrocarriles Espanoles (RENFE), Direccion de Compras, Plaza de los Sagrados Corazones, 7, Madrid (16). Copy of tender (in Spanish) available for review in Transportation Equipment Division/OBRA, Room 5091, U.S. Department of Commerce, Washington, D.C. 20230. ★(202-967-4816)

Engineering, laboratory, scientific, research instruments

38111 — BRAZIL — Navigational instruments for sports boats only. ENEPE Associados Representações e Comércio Ltda. (importer, dist., agent), Rua Martim Francisco 414, Santa Cecilia, São Paulo (SP). WTD in prep.

38112—BRAZIL — Laboratory testing, scientific instruments for Paper Industry. Instituto de Pesquisas da Amazônia (government research institute), Caixa Postal 478, 69000 Manaus, Amazonas.

Instruments for measuring, indicating, controlling physical characteristics

● **38200—INDIA**—Supply of horizontal hydraulic tensile testing machine with capacity of 100 tons. Tender No. 407/13/091/1.3.71, bid deadline March 28. Invited by the Director General, Supplies and Disposals, Parliament St., New Delhi, India. Tender documents available, at $4 each, from the India Supply Mission, 2536 Massachusetts Ave., NW., Washington, D.C. 20008. Ref. CDN/ENQ/144.

● **38200—MALAYSIA**—Supply of hydrological equipment including various types of rainfall recorders and water level recorders; also current meters for gauging small to medium rivers and meters for large cable-suspended current for gauging big and deep rivers. Bid deadline Feb. 29. Invited by the Director-General, Drainage and Irrigation Dept., Jalan Swettenham, Kuala Lumpur, Malaysia. Terms and specifications available on short term loan basis from the Business, Photographic and Scientific Equipment Division, BDC-708, U.S. Dept. of Commerce, Washington, D.C. 20230 ★(202-967-2939).

38213 — CZECHOSLOVAKIA — Equipment, instruments for analysis, testing of steel, alloy steel, titanium alloys. United Steel Works (mfr.), Ing. Oleg Engel, Kladno.

38213 — GERMANY — Automatic electronic temperature control devices, temperature recorders and indicators for heavy industry; flue gas testing meters; densimeters and calorimeters. Schwendler & Co. KG. (importer, dist., mfr.), Am Bahnhof 4, 6605 Friedrichsthal. WTD 2/71.

38213—TAIWAN—Continuous process on gas, chemical analysis instruments. Windmill Co., Ltd. (importer, agent, exporter), 68 Chien Kuo North Rd., Taipei 104. WTD in prep.

38216 — COLOMBIA — Water meters. Singer Products & Cia. Ltda., Attn: Jaime Rojas P., Mgr. (importer, dist., retailer), Avenida Jimenez No. 5-16 Oficina 1102, Apartado Aereo 27415, Bogotá. WTD in prep.

Surgical, medical, dental instruments

38410—COLOMBIA—Surgical, medical instruments. Tecnica Electro-Medica, Attn: Mr. Bernardo Moreno-Quiroga (importer, dist., retailer), Carrera 9 No. 16-51 Mezzanine, Apartado Aereo 3752, Bogota. WTD in prep.

38420—COLOMBIA — Surgical appliances, supplies. Tecnica Electro-Medica, Attn: Mr. Bernardo Moreno-Quiroga (importer, dist., retailer), Carrera 9 No. 16-51 Mezzanine, Apartado Aereo 3752, Bogota. WTD in prep.

38423—ARGENTINA — High temperature security clothing. Correspondence requested in Spanish. A. Jordán Cruz e Hijos, S.A. (importer), Boyacá 41, Buenos Aires. WTD in prep.

38430 — TURKEY — Dental impression material for repair of false teeth. Requests technical literature, quotations for complete plant c.i.f. Iskenderun. United Nations Industrial Development Organization. Small Industries Development Program, P.O. Box 161, Gaziantep.

38610 — PARAGUAY — Audio-visual equipment, accessories for illiterate adult education. Lic. Haydee de Aquino, Ministry of Education and Worship, Calle F. R. Moreno 470, Asuncion.

38611—PARAGUAY — Photo processing equipment, accessories for reproduction of posters; still cameras using film or paper, over 35mm. Estudio 70 (importer, dist., retailer), Calle Pte. Franco 690, Asuncion. WTD in prep.

Jewelry, silverware, plated ware

39141—CYPRUS—Silver, plated, and stainless steel sports trophies. Interested in direct contact with maker-exporter only. Quote c.i.f. Cyprus. C. Soleas Sporting Stores (dist., agent, retailer), 9 Archbishop Kyprianou St., P.O. Box 226, Limassol. WTD in prep.

Toys, amusement, sporting goods

39493—BRAZIL — Mechanical gymnasium equipment (24), water skis (23), complete basketball (especially backstops), volleyball equipment (23), tennis nets, net stretchers and stringing machines (24). ENEPE Associados Representações e Comércio Ltda. (importer, dist., agent), Rua Martim Francisco 414, Santa Cecilia, São Paulo (SP). WTD in prep.

Office materials

39550 — PARAGUAY — Carbon paper, stencil paper, inked ribbons (typewriter). Copyfil S.R.L. (importer, dist., agent), Calle Oliva 243, Asuncion. WTD in prep.

Costume jewelry, novelties

39610—SWITZERLAND—Costume jewelry, costume novelties of metal, plastics, wood; boutique items. Walter Meyer (importer, dist.), Dolderstrasse 2, P.O. Box 152, 8030 Zurich. WTD 1/72.

Manufacturing industries

39999—PARAGUAY — Smoker's requisites, pipes, genuine novelties for sale through tobacco stores; quality giftware, premiums, gadgets, all kinds, for sale through department stores; fast moving quality consumer goods. Kube S.A. (importer, dist., retailer), Calle Palma y Ayolas, Asuncion. WTD in prep.

Antique, secondhand stores

59330 — PARAGUAY — Used clothing (men, women, children) such as working clothes, blue jeans, jackets. Julio Dam (importer, dist., agent), Calle Colon 1075, Asuncion. WTD 9/71.

Burma Issues Tenders On Telephone Equipment

The Union of Burma Railway Board has issued tender No. MEIC/B.R./14 (T)41(ES) 71-72 for the supply of telephone equipment. Bid deadline is Feb. 23.

Bid should offer one fifty-line PABX, one twenty-line telephone switchboard, one paging system, sixty telephones, and associated equipment. Copies of tender announcement and specifications are available from the Chairman, Union of Burma Railway Board, Bogyoke Aungsan St., Rangoon, Burma or on a short-term loan basis to firms located in the U.S. from the Communications-Electronics Division, BDC-720, Room 4320 U.S. Department of Commerce, Washington, D.C. 20230. ★(202-967-4823)

Israel Agency Seeks Cold Room and Refrigeration Plant

Israel's Agricultural Export Company Ltd. (AGREXCO) plans to issue an international tender for a) building a cold storageroom, and b) supply, erection and testing of a refrigeration plant as an addition to an existing cold storage plant in Ashdod Harbor. Bids may be made on either or both of these projects.

Data and technical specifications are $25 (including airmail postage) until Feb. 29 from AGREXCO, 20 Ha'Arbas St., Tel Aviv; cable address: AGREXCO TEL AVIV; Telex address: TV 714. The bid deadline has not been established.

Firms Can Prequalify For Malagasy Road Project

The Malagasy Republic Ministry of Public Works is soliciting prequalification submissions from companies interested in bidding on two road improvement projects being financed by an International Development Association (IDA) loan. The projects involve sections of two highways totaling 50 miles which will be realigned and paved. Qualifying contractors can bid on either or both. Later this year, two other larger projects will also be financed by the same IDA loan.

Companies must submit a declaration of intention in the French language before Feb. 21 to: Monsieur Le Directeur General des Travaux Publics et des Transports, Boite Postale 295, Tananarive. The declaration must be accompanied by 1) references attesting to previous construction work; 2) description of the firm's personnel, equipment, and installations; and 3) a bank statement of firm's financial condition.

The U.S. Embassy in Tananarive is sending a prequalification document (in French) containing instructions and a model declaration to the Construction, Water Resources and Engineering Services Div., BDC-742, U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-3602).

Iran Issues Tenders On Field Telephones

The Iranian State Railways has issued tender No. 1998/50 for the supply of 270 magnetic field telephones. Bid deadline is Feb. 19.

Copies of tender announcement and specifications are available from the Purchasing General Department, Iranian State Railways, Tehran, or on a short-term loan basis to firms located in the U.S. from the Communications Electronics Division, BDC-720, Room 4320, U.S. Department of Commerce, Washington, D.C. 20230. ★(202-967-4823)

Colombia Asks Tenders On PCM Equipment

Colombia's Empresas Publicas De Medellin has issued a tender for supply and installation of PCM transmission equipment for telephone trunk cables. Bid deadline is Feb. 21.

Copies of tender announcement and specifications are available only from the Empresas Publicas De Medellin, Seccion De Importaciones Edificio Miguel De Aguinaga No. 607 Medellin, Colombia for 250 pesos for first copy and 150 pesos for each additional copy ($1 =21 pesos)

Algeria To Buy Telephone Communications Equipment

Algeria's Ministry of Posts and Telecommunications has issued a tender for the supply and installation of telephone communications equipment. Bid deadline is March 4.

Copies of tender announcement and specifications are available only from the Ministere Des P.T.T., 4 Boulevard Salah Bouakouir, Algiers, Algeria for approximately $10 per copy.

Agencies

Specific foreign firms have expressed interest in agency agreements for the products listed below. Exclusive agencies for these products are wanted only if specified.

Guns, howitzers, mortars

19110—SPAIN—Guns, howitzers, mortars. Exportadora Continental, S.A. (EXCONSA) (agent), Marí de Molina, 22, Madrid (6). WTD 12/71.

Ammunition

19290—SPAIN—Ammunition, except for small arms. Exportadora Continental, S.A. (EXCONSA) (agent), María de Molina, 22, Madrid (6). WTD 12/71.

Broad woven fabric mills, cotton

22111—SWEDEN—Cotton duck, allied fabrics for sports, leisure wear. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

22113—GERMANY—Cotton print cloth yarn fabrics for apparel. Heinz Riemann, Textilagentur (importer, agent), 5 Volbacher Berg, 506 Bensberg. WTD 12/71.

22114—SWEDEN — Denims, moleskins. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

22115—GERMANY—Fine cotton fabrics for apparel. Heinz Riemann, Textilagentur (importer, agent), 5 Volbacher Berg, 506 Bensberg. WTD 12/71.

22115 — SWEDEN — Gabardines of combed, fine cotton. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

22116 — SWEDEN — Corduroys, velveteens, upholstery fabrics of cotton. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

Broad woven fabric mills, manmade fiber, silk

22213—SWEDEN—Gabardines of polyester, viscose blends. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

22214—SWITZERLAND — Blend, surf type batiste fabrics, 65 percent polyester, 35 percent cotton, for ladies' nightwear, to be job embroidered in Switzerland and, to the larger part, directly sold to nightwear manufacturers throughout Europe. Okutex AG (agent, job embroidery), St. Leonhardstrasse 20, 9001 St. Gallen. WTD in prep.

22218—SWEDEN—Upholstery fabrics of man-made fiber and silk. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

Broad woven fabric mills, wool

22314—SWEDEN—Upholstery fabrics of wool. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

Knitting mills, products

22561—GERMANY—Warp-knit finished fabrics for apparel. Heinz Riemann, Textilagentur, (importer, agent), 5 Volbacher Berg, 506 Bensberg. WTD 12/71.

Dyeing, finishing textiles, except wool fabrics, knit goods

22628 — GERMANY — Man-made fiber, silk fabrics for apparel. Heinz Riemann, Textilagentur (importer, agent), 5 Volbacher Berg, 506 Bensberg. WTD 12/71.

Yarn, thread mills, products

22812—VIET NAM—Grey cotton yarn (about 8 million lbs. annual requirement): 30/1 carded, hank or cone; 40/1 carded, hank or cone; 40/1 combed, hank or cone. Ets. Thai Binh (agent), 587 Nguyen Trai St. Cholon. WTD in prep.

22813—VIET NAM—Yarn of manmade fiber about 120 M/T P.A.: viscose rayon yarn 1000-1200; 250 D; 450 D; 500 D in varying glots, bright on cone or semi dull, bleached white, natural white; nylon filament yarn; 500 D; various colors; about 800,000 lbs. P.A.; aceta yarn, white and colored; viscose spun rayon yarn, white; about 800.000 lbs P.A. Ets. Thai Binh (agent), 587 Nguyen Trai St. Cholon. WTD in prep.

Textile goods

22953—SWEDEN — Polyurethane coated fabrics for sports, leisure wear. Petrus Skoglund AB (importer, agent), Box 237, S-501 04 Boras. WTD in prep.

Men's, youths', boys' clothing

23230—HONG KONG—Neckties. Davie, Boag (Traders) Ltd. (importer, dist., agent), 8/F, Block C, Watson's Estate, Watson Rd., North Point. WTD 6/71.

Women's, misses', children's, infants' under garments

23412—HONDURAS—Complete line of high quality women's underwear. Columbia Agencies (Mariano Aguilar O.) (importer, dist., agent), Colonia La Campaña, Tegucigalpa, D. C. WTD 9/70.

Fabricated textile products

23920—FRANCE — Nonwoven printed textile table linen. MINERVA (importer, dist., mfr.), Rue Pierre-Baour, Centre Commercial Bordeaux-Nord, 33-Bordeaux. WTD in prep.

23951—GERMANY — Embroideries for foundation garments. Heinz Riemann, Textilagentur (importer, agent), 5 Volbacher Berg, 506 Bensberg. WTD 12/71.

Paper mills

26211 — TAIWAN — Newsprint. Shinn Huei & Co., Ltd. (importer, agent, exporter), 46 Min Chuan East Rd., Taipei 104. WTD in prep.

26215—HONDURAS—White and colored bond paper (base: 60 lbs.) in different sizes and in 500-sheet packages. Columbia Agencies (Mariano Aguilar O.) (importer, dist., agent), Colonia La Campaña, Tegucigalpa. D. C. WTD 9/70.

Paperboard mills, products

26315—HONDURAS — Paperboard, obverse and reverse, white/gray and gray/gray. Caliber: 14, 18, 20, 30, 40, 60, 80. Columbia Agencies (Mariano Aguilar O.) (importer, dist., agent), Colonia La Campaña, Tegucigalpa, D.C. WTD 9/70.

Industrial chemicals

28199—INDIA—Organic, inorganic laboratory chemicals used in chemical, biological laboratories. Universal Traders (importer, agent), 4 Mohattà Market, 5th Floor, Palton Rd., P.O. Box 1431, Bombay 1. WTD in prep.

Drugs

28312—ARGENTINA — Bacterial cultures (seed inoculants). ALMI S.R.L. (agent), Condarco 529, Buenos Aires. WTD in prep.

28340 — AUSTRALIA — Pharmaceutical preparations. Salmond & Spraggon (Australia) Pty. Ltd., Attn: Harold S. Cottee, Mgn. Dir. (dist., mfr., agent), Loyalty Rd., North Rocks, N.S.W. 2151, P.O. Box 253, Parramatta, N.S.W. 2150. WTD in prep.

28345 — SWITZERLAND — Preparations acting on digestive and genitourinary systems, in particular anticonceptional products. Requests offers from manufacturers only. Galenica Vertretungen AG, Attn: E. Rüfenacht (dist., mfr.), Untermattweg, 3000 Bern. WTD 12/71.

28346 — SWITZERLAND — Preparations acting on the skin. Request offers from manufacturers only. Galenica Vertretungen AG, Attn: E. Rüfenacht (dist., mfr.), Untermattweg, 3000 Bern. WTD 12/71.

28347 — SWITZERLAND — Vitamins, nutrient and hematinic preparations. Requests offers from manufacturers only. Galenica Vertretungen AG, Attn: E. Rüfenacht (dist., mfr.), Untermattweg, 3000 Bern. WTD 12/71.

28348 — SWITZERLAND — Preparations affecting parasitic, infective diseases. Request offers only from manufacturers. Galenica Vertretungen AG, Attn: E. Rüfenacht (dist., mfr.), Untermattweg, 3000 Bern. WTD 12/71.

28349—AUSTRALIA—Veterinary, pharmaceutical products. Salmond & Spraggon (Australia) Pty. Ltd., Attn: Harold S. Cottee, Mgn. Dir. (dist., mfr., agent), Loyalty Rd., North Rocks, N.S.W. 2151, P.O. Box 253, Parramatta, N.S.W. 2150. WTD in prep.

Soap, detergents, cleaning preparations, perfumes, cosmetics

28421—AUSTRALIA — Household products, such as aerosol-type insecticides. Salmond & Spraggon (Australia) Pty. Ltd., Attn: Harold S. Cottee, Mgn. Dir. (dist., mfr., agent), Loyalty Rd., North Rocks, N.S.W. 2151, P.O. Box 253, Parramatta, N.S.W. 2150. WTD in prep.

28424—AUSTRALIA—Household products, such as metal and floor polishes. Salmond & Spraggon (Australia) Pty. Ltd., Attn: Harold S. Cottee, Mgn. Dir. (dist., mfr., agent), Loyalty Rd., North Rocks, N.S.W. 2151, P.O. Box 253, Parramatta, N.S.W. 2150. WTD in prep.

28440—AUSTRALIA—Toiletry products. Salmond & Spraggon (Australia) Pty. Ltd., Attn: Harold S. Cottee, Mng. Dir. (dist., mfr., agent), Loyalty Rd., North Rocks, N.S.W. 2151, P.O. Box 253, Parramatta, N.S.W. 2150. WTD in prep.

Chemical products

28930 — TAIWAN — Letterpress, lithographic offset inks. Shinn Huei & Co., Ltd. (importer, agent, exporter), 46 Min Chuan East Rd., Taipei 104. WTD in prep.

Petroleum refining

29114—GERMANY—Distillate fuel oil additives cold filter plugging point — 27^{F}. CIP Chemische Industrieprodukte GmbH (dist., mfr.), 25-27 Wormser Strasse, 5 Koeln 1. WTD 1/72.

Plastic products

30793 — SPAIN — Plastic laminated, sheets, rods, tubes. Deplas, S.A. (agent), Ronda de Toledo, 16, Madrid (5). WTD 1/72.

30798—AUSTRALIA — Plastic moulded trigger type operators for aerosol cans. Vic Furnari (importer, dist., agent), G.P.O. Box 5120, Sydney, N.S.W. 2001, 23 Milner Crescent, Wollstonecraft, N.S.W. 2065. WTD 11/71.

Footwear, except rubber

31410—HONG KONG—Leather shoes; ladies', men's. David, Boag (Traders) Ltd. (importer, dist., agent), 8/F, Block C, Watson's Estate, Watson Rd., North Point. WTD 6/71.

Glass products

32316—AUSTRALIA—Scientific, laboratory, industrial technical glassware. R.P. Chadwick Pty. Ltd., Attn: A. R. Law, Mgr. (importer, dist.), 65 Dickson Ave., P.O. Box 142, Artarmon, N.S.W. 2064. WTD 11/71.

Abrasive, asbestos, nonmetallic mineral products

32913—TAIWAN—Coated abrasive papers. Unique Trading Co., Ltd. (importer, dist., agent), 25-5, Hsin Shen North Rd., Sec. 1, Taipei 104. WTD in prep.

Rolling, drawing, extruding of nonferrous metals

33523—THAILAND — Aluminum foil, plain, bulk quantity, for wrapping hot roasted chickens, capable to keep heat of chickens for at least 20-40 min. Requests samples, c.i.f. Bangkok prices. Central Department Store Ltd. (importer, department store), 306 Silom Rd., P.O. Box 471, Bangkok. WTD 9/71.

33574 — PARAGUAY — Communication (telephone) wire, cable. Antonio Glavinich (agent), Calle Hernandarias 845, Asuncion. WTD 9/71.

Fabricated wire products

34819—SOUTH AFRICA—Tire chains: protection, additional traction for mining, construction, logging industrial purpose motor vehicles. K. F. Albrecht & Co. South Africa (Pty.) Ltd. (importer, dist., agent), 304/330 Broadway Industries Centre, Foreshore, Cape Town, Cape Province. WTD 12/71.

Farm machinery

35221—PAKISTAN—Wheel tractors, attachments (except contractors' off-highway type, garden tractors, and motor tillers). ZAMINOS (agent), 106-107 WAPDA House, Shahrah-e-Quaid-e-Azam, Lahore. WTD 12/71.

35224—COLOMBIA—Plows, listers, harrows, rollers, pulverizers, similar equipment. Mr. Daniel Alfonso Guzman—I. A. (agent), Calle 14 No. 8-37 Piso 5, Apartado Aereo 5520, Bogota. WTD in prep.

35227 — PARAGUAY — Tree pruning tools, air powered. Antonio Glavinich (agent), Calle Hernandarias 845, Asuncion. WTD 9/71.

35228—PAKISTAN—Machines for preparing crops, wheat threshers, rice husking equipment. ZAMINOS (agent), 106-107 WAPDA House, Shahrah-e-Quaid-e-Azam, Lahore. WTD 12/71.

Construction, mining, materials handling machinery, equipment

35312 — ARGENTINA — Track laying type tractors. Exclusive agency. PAVEX, SA (importer, dist., agent), Sarmiento 470, 3er Piso, Of. 304, Buenos Aires. WTD 10/71.

35316—ARGENTINA — Truck mixers, pavers, related equipment. Exclusive agency. PAVEX, S.A. (importer, dist., agent), Sarmiento 470, 3er Piso, Of. 304, Buenos Aires. WTD 10/71.

35317 — ARGENTINA — Track-laying tractor-shovel loaders. Exclusive agency. PAVEX, S.A. (importer, dist., agent), Sarmiento 470, 3er Piso, Of. 304, Buenos Aires. WTD 10/71.

35318 — ARGENTINA — Motor graders, scrapers, rollers. Exclusive agency. PAVEX, S.A. (importer, dist., agent), Sarmiento 470, piso 3°, Of. 304, Buenos Aires. WTD 10/71.

35318 — ARGENTINA — Compactors, heavy, over 20 tons, static, vibratory and rubber tired. INSUD—c/o Sr. Félix Biet (dist., agent), 25 de Mayo 460, Buenos Aires. WTD 3/71.

35320 — VIET NAM — Marble drilling, cutting and polishing equipment. Requests catalogs; quotations c.i.f. & ocean freight Saigon indicated separately. VINACO (importer, dist., mfr.), 9 Lam Son Sq. (4th floor), P.O. Box 409, Saigon. WTD in prep.

35322—PAKISTAN—Crushing, pulverizing, screening machinery. Zaminos (agent), 106-107 WAPDA House, Shahrah-e-Quaid-e-Azam, Lahore. WTD 12/71.

35324 — ARGENTINA — Wagon rock drills. INSUD—c/o Sr. Félix Biet (dist., agent), 25 de Mayo 460, Buenos Aires. WTD 3/71.

Metalworking machinery

35410—DENMARK—Metalworking tools. C. Henriksen & Co. A/S (importer, dist., agent), 9 Fjeldhammervej, DK-2610 Rødovre. WTD 1/72.

35482 — ITALY — Mechanics' power driven hand tools. Paolini, Lorenzo (importer, dist., agent), Via Ostienze 48, 00184 Rome. WTD 12/71.

35484 — ITALY — Automobile maintenance, diagnostic equipment; all types. Paolini, Lorenzo (importer, dist., agent), Via Ostiense 48, 00184 Rome. WTD 12/71.

35484—SWITZERLAND — Service station equipment; automotive maintenance, diagnostic equipment. Genuine novelties only. Request offers from manufacturers only. Streag Auto Handels AG; Attn: Paul Ruch, Dir. (importer, dist.), Badenerstrasse 610, 8048 Zurich. WTD 3/71.

35484—THAILAND—Automobile maintenance equipment, complete line. Requests catalogs, price list. Pan Supplies Co., Ltd. (importer, dist.), 213 Asoke Rd., Sukhumvit Soi 21, Bangkok. WTD 11/71.

35484—THAILAND—Brake horse-power tester, engine analyzer and chassis dynamometer—in complete set or separate units; shock absorber tester; chassis bender. Prefers to communicate with manufacturers directly. Exclusive distributorship franchise. Requests catalogs, export price list. Siam Mercantile (1960) Co., Ltd. (importer, dist., agent), 117 Suriwongse Rd., Bangkok. WTD 1/71.

Special industry machinery

35513—AUSTRALIA — Packaging machinery for food products. Requests details on equipment, indicative f.o.b. prices. Nelson Packaging Equipment Pty. Ltd., Attn: D. L. Nelson, Mng. Dir. (importer, dist., agent), 100-114 William St., Brookvale, N.S.W. 2100. WTD 11/71.

35513—VENEZUELA—Complete line of equipment for processing "cassava" (tapioca or arrow root); grinders, driers, boilers, other processing machinery. Herbert Zander & Co., S.A., Attn: Mr. Enrique Darer (importer, dist., agent), Edificio Casa de Italia, Avda Industria —San Bernardino, Apartado 14137, Caracas. WTD 1/71.

35521 — TAIWAN — Bleaching, dyeing, finishing machinery. Unique Trading Co., Ltd. (importer, dist., agent), 25-5, Hsin Shen North Rd., Sec. 1, Taipei 104. WTD in prep.

35522—TAIWAN — Parts, attachments, accessories for textile machinery including knitting, spinning machines. United Engineering Co., Ltd. (importer, agent, exporter), 2nd Fl., 7-37 Chung Shan North Rd., Sec. 2, Taipei 104. WTD in prep.

35522 — TAIWAN — Parts, attachments, accessories for textile machinery including spinning, knitting, bleaching, dyeing, finishing machines. Lanson Enterprises Ltd. (importer, agent, exporter), Rm. 809, Enterprise Bldg., 54-18 Chung Shan North Rd., Sec. 3, Taipei 104. WTD in prep.

35531—FINLAND—Machinery for making wooden toothpicks with triangular cross-cut. Oy Julius Tallberg Ab, Attn: Mr. Veikko Ikonen, Woodworking Machinery Dept. (importer, dist., agent), Aleksanterinkatu 21, 00100 Helsinki 10. WTD in prep.

35540—SWITZERLAND—Paper, paperboard converting equipment, such as box, carton making, related machinery, equipment. Requests offers from manufacturers only. FAG S.A., Attn: H. R. Nyffeler, Mng. Dir. (dist., mfr., agent), 7 rue de Genève, 1001 Lausanne. WTD 10/71.

35550 — UNITED KINGDOM — Paper drilling machines; wire stitching machines and guillotines. Thompson & Langley Ltd. (importer, dist.), 54 Farringdon Rd., London, EC1R 3BL. WTD in prep.

35552 — SWITZERLAND — Photocomposing/typesetting machinery, parts, attachments for printing trades machinery, bookbinding equipment, engravers' materials equipment, related accessories. Requests offers from manufacturers only. FAG S.A. Attn: H. R. Nyfeler, Mng. Dir. (dist., mfr., agent), 7 rue de Genève, 1001 Lausanne. WTD 10/71.

35593—TAIWAN — Plastic-working machinery. Unique Trading Co., Ltd. (importer, dist., agent), 25-5, Hsin Shen North Rd., Sec. 1, Taipei 104. WTD in prep.

35594—TAIWAN — Rubber-working machinery. Unique Trading Co., Ltd. (importer, dist., agent), 25-5, Hsin Shen North Rd., Sec. 1, Taipei 104. WTD in prep.

35595 — PHILIPPINES — One complete set, castor oil (dehydrated grade) processing equipment. Isaac F. Arribas, Jr. (consultant), 8 Lands St., Project 6, Quezon City. WTD in prep.

35595—TAIWAN—Leather-working machinery. Unique Trading Co., Ltd. (importer, dist., agent), 25-5, Hsin Shen North Rd., Sec. 1, Taipei 104. WTD in prep.

General industrial machinery

35613—THAILAND—High pressure water pumps for use at gas stations. Prefers to communicate with manufacturers directly. Exclusive distributorship franchise. Requests catalogs, export price list. Siam Mercantile (1960) Co., Ltd. (importer, dist., agent), 117 Suriwongse Rd., Bangkok. WTD 1/71.

35613—VIET NAM—Pumps, domestic water systems, gas or electric from ¾ hp to 7 hp. Quotations c.i.f. and freight Saigon indicated separately. Catalogs, printed material requested. General Commerce Representative, Attn: Mr. Le Vinh Ninh, Comm. Mgr. (agent), 97 Bis Ham Nghi, P.O. Box 2164, Saigon. WTD in prep.

35614—ARGENTINA—Rotary air compressors, screw type, over 17 cu. meters. INSUD—c/o Sr. Félix Biet (dist., agent), 25 de Mayo 460, Buenos Aires. WTD 3/71.

35660—SWITZERLAND—Novel power transmission equipment for industrial use, such as drives, gears, speed changers, clutches, couplings, joints, sprockets, related power transmission elements. Requests offers from manufacturers only. Carl Sigerist & Cie, Attn: H. C. Sigerist (dist., mfr.), Platz 4, 8201 Schaffhausen. WTD 8/71.

35673 — ITALY — Parts, attachments, components for heating equipment. Correspondence requested in Italian. Salvatore SCIRÉ (agent), Viale A. de Gasperi 173, 95127 Catania. WTD 1/72.

35690—AUSTRALIA — Packaging machinery for general industrial use. Nelson Packaging Equipment Pty. Ltd., Attn: D. L. Nelson, Mng. Dir. (importer, dist., agent), 100-114 William St., Brookvale, N.S.W. 2100. WTD 11/71.

35690 — ITALY — Filters and strainers. Correspondence requested in Italian. Salvatore SCIRÉ (agent), Viale A. de Gasperi 173, 95127 Catania. WTD 1/72.

35690—ITALY—Water-purifying apparatus, equipment. Roberto Venco (importer, agent), Via Pinelli 23, 10144 Torino. WTD 11/71.

35690—THAILAND—Lubricating equipment, devices; complete line. Requests catalogs, price list. Pan Supplies Co., Ltd. (importer, dist.), 213 Asoke Rd., Sukhumvit 21, Bangkok. WTD 11/71.

Office, computing, accounting machines

35720—COLOMBIA—Typewriters, parts, attachments for same. Internacional de Equipos Para Oficina Ltda. (Inter-Equipos) (agent), Calle 19 #6-68, Apartado Aereo 9244, Bogota. WTD in prep.

35731 — AUSTRALIA — Desk top computers. AIR Programs International, Attn: Ross Thyer, Dir. Electronics Div. (importer, dist., agent), 38 Martin Place, Sydney, N.S.W. 2000. WTD 11/71.

35731—FRANCE—Portable data acquisition system including: keyboard, display, cassette recorder or equivalent, printer (optional). Cassette to IBM tape compatible translator, and interface cassette to DEC computer or equivalent. Digital cassette recorder (start-stop) *ECMA* standard if possible—high reliability. Applications: cash registers, tape punch replacement, systems for banks, computer peripherals; other computer peripherals as teletype. Emitronics (importer, dist., agent), 13, rue Quentin-Bauchart, Paris 8e. WTD in prep.

35731—UNITED KINGDOM — Information handling, processing and control devices, modular or expandable type. I D M Electronics Ltd., Attn: N. E. Weber-Brown (mfr., exporter), Arkwright Rd., Reading, RG2 OLH. WTD in prep.

35731—UNITED KINGDOM—Computer peripheral devices: magnetic tape transports; card punches and punched card readers; line and character printers; drums and discs; visual display units. Trend Electronics Ltd., R. A. Holdsworth—Sales Executive (dist., mfr.), St. John's Works, Tylers Green, High Wycombe, Bucks. WTD in prep.

35740—COLOMBIA — Calculating and accounting machines, parts, attachments for same. Internacional de Equipos Para Oficina Ltda. (Inter-Equipos) (agent), Calle 19 No. 6-68, Apartado Aereo 9244, Bogota. WTD in prep.

35790—COLOMBIA — Dictating, duplicating, postage meters, other office machines, parts, attachments. Internacional de Equipos Para Oficina Ltda. (Inter-Equipos) (agent), Calle 19 No. 6-68, Apartado Aereo 9244, Bogota. WTD in prep.

35790—VIET NAM—Standard office machinery, equipment including duplicating, stamping, counting, typing, accounting. Requests catalogs; quotations c.i.f. & ocean freight Saigon indicated separately. VINACO (importer, dist., mfr.), 9 Lam Son Sq. (4th floor), P.O. Box 409, Saigon. WTD in prep.

35791—FRANCE—Automatic mail sorting machines, mail processing systems. Société Miollis (importer), 12 rue Cépré, Paris 15e. WTD in prep.

Service industry machines

35811—SWITZERLAND—Coin-operated and manual beverage and food vending machines; automatic merchandising machines for catering industry, all kinds. Selecta AG, Mr. Josef Jeger, Dir. (importer, dist., agent), 3280 Murten. WTD 10/71.

35852 — NIGERIA — Domestic air conditioners. A. W. Ibe & Co. Ltd. (importer, dist., retailer), 78 Yakubu Gowon St., P.O. Box 3909, Lagos. WTD 7/71.

35853—NIGERIA—Industrial refrigerators, electric. A. W. Ibe & Co., Ltd. (importer, dist., retailer), 78 Yakubu Gowon St., P.O. Box 3909, Lagos. WTD 7/71.

35853—SWITZERLAND — Beverages, fruit juice and food products cooling, dispensing equipment. Selecta AG, Attn: Josef Jeger, Dir. (importer, dist., agent), 3280 Murten. WTD 10/71.

35857—ITALY—Components, accessories for air conditioning and refrigeration equipment. Correspondence requested in Italian. Salvatore SCIRE' (agent), Viale A. de Gasperi 173, 95127 Catania. WTD 1/72.

35857—SWITZERLAND—Air pollution control equipment, novelties, all kinds.

Carl Sigerist & Cie, Attn: H. C. Sigerist (dist., mfr.), Platz 4, 8201 Schaffhausen. WTD 8/71.

35860—THAILAND—Gasoline dispensing pumps, complete line. Requests catalogs, price list. Pan Supplies Co., Ltd. (importer, dist.), 213 Asoke Rd., Sukhumvit Soi 21, Bangkok. WTD 11/71.

35860—THAILAND—Chassis and gear oil lubricating pumps, equipment. Prefer to communicate with manufacturers directly. Exclusive distributorship franchise. Requests catalogs, export price list. Siam Mercantile (1960) Co., Ltd. (importer, dist., agent), 117 Suriwongse Rd., Bangkok. WTD 1/71.

35893—THAILAND — Vacuum cleaners for use at gas stations. Prefers to communicate with manufacturers directly. Exclusive distributorship franchise. Requests catalogs, export price list. Siam Mercantile (1960) Co., Ltd. (importer, dist., agent), 117 Suriwongse Rd., Bangkok. WTD 1/71.

Electric transmission, distribution

36110—ITALY—Electric and electronic measuring instruments. Smetradio (importer, dist., agent), Via S. Antonio da Padova 14 e 11, 10121 Torino. WTD 4/71.

36113—FRANCE—Microwave test equipment, band Q, millimetric, over 30 GHz. DIMES (Distribution Internationale de Matériel Electronique et Spatial) (dist., mfr.), 31, rue George Sand, 91—Palaiseau WTD 2/71.

Electrical industrial apparatus

36220—ITALY—Electric and electronic industrial controlling instruments, writing and self-regulating. Smetradio (importer, dist., agent), Via S. Antonio da Padova 14 e 11, 10121 Torino. WTD 4/71.

36220—ITALY—Industrial controls, control accessories. Correspondence requested in Italian. Salvatore SCIRE' (agent), Viale A. de Gasperi 173, 95127 Catania. WTD 1/72.

Household appliances

36321—NIGERIA — Refrigerators (electric) household. A. W. Ibe & Co. Ltd. (importer, dist., retailer), 78 Yakubu Gowon St., P.O. Box 3909, Lagos. WTD 7/71.

36331 — KUWAIT — Household washing machines. al-QUTAMI, Bader A. (dist., agent, retailer), P.O. Box 2145, Kuwait. WTD 5/71.

36343—NIGERIA — Electric household appliances. A. W. Ibe & Co. Ltd. (importer, dist., retailer), 78 Yakubu Gowon St., P.O. Box 3909, Lagos. WTD 7/71.

Electric lighting, wiring equipment

36421—VIET-NAM — Current-carrying wiring devices including fluorescent starters, switches, sockets, conductors, connectors. Quotations c.i.f. and freight Saigon indicated separately; catalogs requested. General Commerce Representative (agent), 97 Bis Ham Nghi, P.O. Box 2164, Saigon. WTD in prep.

36442—SPAIN—Plastics wiring devices and supplies, noncurrent carrying. Deplas, S.A. (agent), Ronda de Toledo, 16, Madrid (5). WTD 1/72.

Radio, television receiving sets

36515—AUSTRALIA—Audio/visual educational aids. AIR Programs International, Attn: Ross Thyer, Dir. Electronics Div. (importer, dist., agent), 38 Martin Place, Sydney, N.S.W. 2000. WTD 11/71.

36515 — FINLAND — Amplifiers, loudspeakers, other audio equipment. Ohjelma Oy Finnestrad, Attn: Mr. Eero Vallila, Mng. Dir. (importer, dist., retailer), Fredrikinkatu 30 A, Helsinki 12. WTD 4/71.

36520 — FINLAND — Recording tape blanks and tapes with prerecorded music. Ohjelma Oy Finnestrad, Attn: Mr. Eero Vallila, Mng. Dir. (importer, dist., retailer), Fredrikinkatu 30 A, Helsinki 12. WTD 4/71.

Communication equipment

36620—UNITED KINGDOM—Microwave components, including filters, Gunn effect oscillators, mixers and low noise amplifiers, airborne antenna, and flexible/elliptical waveguides. I D M Electronics Ltd., Attn: I. M. H. Williamson—Dir., Microwave Div. (mfr., exporter), Arkwright Rd., Reading, RG2 OLH. WTD in prep.

36621—AUSTRALIA—Resistivity transmitters, receivers; induced polarisation transmitters, receivers; spontaneous potential receivers. Australian Groundwater Consultants Pty. Ltd., Attn: C. W. Edwards (engineering), 12-14 Mount St., P.O. Box 344, North Sydney, N.S.W. 2060. WTD 5/71.

36622—AUSTRALIA—Radio, television broadcast equipment; closed circuit television equipment. AIR Programs International, Attn: Ross Thyer, Dir. Electronics Div. (importer, dist., agent), 38 Martin Place, Sydney, N.S.W. 2000. WTD 11/71.

36623—PARAGUAY—Door and gate operating devices (garage, automatic, electric). Tecno Electric S.A. (dist., agent, retailer), Calle 15 de Agosto 640, Asuncion. WTD 9/71.

36623 — PARAGUAY — Street traffic lights, regulating systems. Julio Dam (importer, dist., agent), Calle Colon 1075, Asuncion. WTD 9/71.

36626 — FRANCE — Automated optical recognition equipment for mail sorting. Société Miollis (importer), 12 rue Cépré, Paris 15e. WTD in prep.

36626—FRANCE—Microwave communication equipment, band Q, millimetric, over 30 GHz. DIMES (Distribution Internationale de Matériel Electronique et Spatial) (dist., mfr.), 31, rue George Sand, 91–Palaiseau. WTD 2/71.

36626—SWITZERLAND — Geophysical electronic instruments, all kinds, including laser alignment systems. BEVAC, Mr. Marcel Grangier (dist., agent), Route d'Yverdon 18, 1033 Cheseaux, Vaud. WTD 8/71.

Electronic components, accessories

36793—NETHERLANDS — Resistors, metal film, thick film, high voltage up to 20 kv, wide resistance range 10 KO to 1,000 MO, according to MIL specifications. Koning en Hartman Ingenieursbureau N.V. (importer, dist.), 30 Koperwerf, The Hague. WTD 1/71.

36795—FRANCE—Quartz and quartz filters. DIMES (Distribution Internationale de Matériel Electronique et Spatial) (dist., mfr.), 31, rue George Sand, 91–Palaiseau. WTD 2/71.

36795—NETHERLANDS — Electronic transducers, associated equipment. Exclusive agency. C. N. Rood N.V. (importer, dist., agent), P.O. Box 4542, Rijswijk, Zuid Holland. WTD 9/71.

Electrical machinery, supplies

36930—AUSTRALIA — Electromedical equipment. AIR Programs International, Attn: Ross Thyer, Dir. Electronics Div. (importer, dist., agent), 38 Martin Place, Sydney, N.S.W. 2000. WTD 11/71.

36930—NETHERLANDS—Medical electronic apparatus, instruments. Meyvis & Co. N.V. (importer, dist., agent), 4 Pergolesilaan, Bergen op Zoom. WTD 2/71.

36930—PAKISTAN—Electromedical apparatus. Ross Bros. (importer, dist., agent), 424-A Alfalah Bldg., P.O. Box 234, Shahrah-e-Quaid-e-Azam, Lahore. WTD in prep.

Motor vehicles, equipment

37141—COLOMBIA—Spare parts, accessories for motor vehicles. Representaciones Hispanicas de Colombia, Attn: Mr. Jorge M. Mora R., Mgr. (agent), Carrera 42 No. 24-62, Apartado Aereo 9429, Bogota. WTD in prep.

Railroad equipment

37413—FRANCE—Parts for locomotives, for sale separately, all types of electric, electronic and control devices installed on railway, subway train engines. Société TEL—Sté Anonyme pour la Fabrication d'Appareils de Précision (importer, agent), 10, rue de Varet, 75-Paris 15. WTD 12/71.

37423—FRANCE—Parts, accessories for railroad, subway train cars. Société TEL —Sté Anonyme pour la Fabrication d'Appareils de Précision (importer, agent), 10, rue de Varet, 75-Paris 15. WTD 12/71.

Engineering, laboratory, scientific, research instruments

38110—UNITED KINGDOM — Air and water pollution monitoring, measurement instruments; remote sensing, telemetry equipment. Muirhead Ltd., Attn: W. D. Sutherland, Dir. Addison Div. (mfr.), Beckenham, Kent. WTD in prep.

38112—AUSTRALIA — Ground magnetometers; seismic refraction and reflection equipment; well logging equipment e.g. gamma, resistivity, S.P.; vertical field e.m. equipment. Australian Groundwater Consultants Pty. Ltd., Attn: C. W. Edwards (engineering), 12-14 Mount St., P.O. Box 344, North Sydney, N.S.W. 2060. WTD 5/71.

38112—NETHERLANDS — Instruments for university and industrial research laboratories; for chemical analysis, other medical purposes. Exclusive agency. Meyvis & Co. N.V. (importer, dist., agent), 4 Pergolesilaan, Bergen op Zoom. WTD 2/71.

38112—SWITZERLAND — Soil testing, geophysical instruments, for laboratories, civil engineering, building trade, for testing of soil, rock, concrete, bitumen, water in laboratories or on building sites. BEVAC, Attn: Mr. Marcel Grangier (dist., agent, geophysical engineering), Route d'Yverdon 18, 1033 Cheseaux, Vaud. WTD 8/71.

38113 — PARAGUAY — Surveying and drafting equipment, instruments and apparatus, except optical, including surveying, transits, drawing instruments, drafting machines, slide rules, planimeters, integrators, etc.; drafting tables. Copyfil S. R. L. (importer, dist., agent), Calle Oliva 243, Asuncion. WTD in prep.

38113—SWITZERLAND — Geophysical, civil engineering and building trade surveying instruments. BEVAC, Mr. Marcel Grangier (dist., agent, geophysical engineering), Route d'Yverdon 18, 1033 Cheseaux, Vaud. WTD 8/71.

Instruments for measuring, indicating, controlling physical characteristics

38210—AUSTRALIA — Ground scintillometers. Australian Groundwater Consultants Pty. Ltd., Attn: C. W. Edwards (engineering), 12-14 Mount St., P.O. Box 344, North Sydney, N.S.W. 2060. WTD 5/71.

38213—ITALY — Industrial instruments for the mechanical and rubber industry. Smetradio (importer, dist., agent), Via S. Antonio da Padova 14 e 11, 10121 Torino. WTD 4/71.

38213—NETHERLANDS — Electronic testing instruments, equipment. Exclusive agency. C. N. Rood N.V. (importer, dist., agent), P.O. Box 4542, Rijswijk, Zuid Holland. WTD 9/71.

38213—TAIWAN — Industrial process instruments. Hundred Countries Trading Center (importer, agent, exporter), 4th Fl., 115-10 Kweilin Rd., Taipei 108. WTD in prep.

38216—NETHERLANDS — Instruments for measuring air, water pollution. Meyvis & Co. (importer, dist., agent), 4 Pergolesilaan, Bergen op Zoom. WTD 2/71.

38216—SWITZERLAND — Civil engineering, geophysical measuring instruments, all kinds. BEVAC, Mr. Marcel Grangier (dist., agent, geophysical engineering), Route d'Yverdon 18, 1033 Cheseaux, Vaud. WTD 8/71.

Surgical, medical, dental instruments

38410—COLOMBIA—Surgical, medical instruments. Almacen Padco Ltda., Attn: Luis H. Trujillo, Mgr. (importer, dist., agent), Carrera 9 No. 13-39, Apartado Aereo 3901, Bogota. WTD in prep.

38410—GERMANY—Ultrasonic medical and surgical instruments, equipment. ATOMIKA Technische Physik GmbH (agent), D-8000 Muenchen 13, Bauerstrasse 19. WTD in prep.

38410 — PARAGUAY — Stethoscopes; surgical and medical instruments, apparatus; hospital equipment. Jose Enrique Romaguera (importer, dist., agent), Casilla Postal 1556, Asuncion. WTD in prep.

38421 — FRANCE — Breathing devices (for check up), pletysmographs, body pletysmographs. Etablissements Gauthier (importer, mfr., agent), 40, rue Poliveau, 75-Paris 05. WTD 1/72.

38421 — SWITZERLAND — Advanced medical, hospital equipment, in particular respirators, resuscitators for applications in gynaecology, pediatrics. Requests offers from manufacturers only. MEDELA AG., Attn: Werner Kraehenbuehl, Mgr. (dist., agent), Industriestrasse 40, 6300 Zug 2. WTD 12/71.

Photographic equipment, supplies

38610—ENGLAND — Photo composing machines. Thompson & Langley Ltd. (importer, dist.), 54 Farringdon Rd., London, EC1R 3BL. WTD in prep.

38614 — PARAGUAY — Microfilming equipment, including microfilm cameras, readers, printers, enlargers, other special purpose equipment for microfilm use. Copyfilm S.R.L. (importer, dist., agent), Calle Oliva 243, Asuncion. WTD in prep.

Musical instruments, parts

39314—PARAGUAY — Musical instruments, related electronic equipment to play jazz music. Union S.R.L. (importer, agent, retailer), Casilla Postal 66, Asuncion. WTD in prep.

Toys, amusement, sporting goods

39490—PARAGUAY—Sports equipment and accessories for tennis, basketball, volleyball, boxing, golf, rugby, fencing, water skiing, track and field; equipment for tennis courts and gymnasiums; tennis tables and robots; motor boating equipment; motor boats remote control sets; tennis strings, 35 and 600 ft. rolls. Victoria Sport (importer, dist., agent), Calle Coronel Bogado 963, Asuncion. WTD 9/71.

39490 — PARAGUAY — Swimming pool filters, equipment, chemicals, accessories. Agua y Bombas S.R.L. (importer, dist., agent), Casilla Postal 566, Asuncion. WTD in prep.

Manufacturing industries

39990 — PARAGUAY — Novelties, all kinds; devices for household, home use; labor-saving tools; gadgets; quality giftware; premiums. Julio Dam (importer, dist., agent), Calle Colon 1075, Asuncion. WTD 9/71.

39991 — THAILAND — Extinguishers, fire. Requests catalogs, c.i.f. Bangkok prices. Visudhi Pharnich Co., Ltd. (importer, dist.), 659 Samyek, New Rd., P.O. Box 1893, Bangkok. WTD 11/71.

Mexico Prequalifying Firms For Construction Projects

Mexico's Secretaria de Marina has issued a call for the registration of contractors interested in bidding on construction work to be carried out in 1972 on the ports of Mexico. Contracts will be let on the following projects: breakwaters, piers, marginal sea protections, marine dredges, wharfs, shipyards, dry dikes, bridges, warehouses, sheds, silos, tanks, storage yards, port connector roads, dikes, port connected railroads, industrial buildings, boarding schools and complementary works, administrative buildings; barracks, offices, and quarters; retaining walls; electrical works in general; hydraulic and sanitary works; mechanization of docks, holds, yards, and silos; air conditioning, refrigeration, heating, deep wells, reservoirs, plants for the treatment and purification of water, corrosive preventive coatings, waterproofing, submarine engineering, fire prevention installations, electromechanical works, quality control of construction materials, cathode protection, architectural designs, plans, and projects; structural designs, plans, and projects; designs and plans for electrical installations, designs and plans for electrical transmissions, physical fluvial surveys, physical marine surveys, physical-topohydrographic surveys, geological surveys, economic surveys, planning surveys.

Interested parties should register with the Direccion General de Obras Maritimas, Jefatura de Construccion, Insurgentes sur 465, 6° Piso, Mexico City, between 11 a.m. and 2 p.m., in order to be included in the registry of the Secretaria del Patrimonio Nacional.

Visiting Buyers And Officials

ISRAEL — Itzhak Litvin, Owner and Manager, Magen & Sport Ltd., P.O. Box 4083, 8 Bialik St., Hadar Carmel, Haifa, interested in purchasing all kinds of **sporting/camping equipment**; will visit National Sporting Goods Assn. Show in Chicago. Feb. 5 via New York for one month. c/o Hankin, Dekalb Pike, Gwynedd, Pa. 19436 (215-699-7224). Itinerary: New York, Chicago, Chicopee, Mass., others as required. WTD 8/69 under revision.

ISRAEL—Prof. Isaac Horowitz, Department of Applied Mathematics, Weizmann Institute of Science, Rehovot, interested in **computers, analog and digital.** Jan. 30 via Boulder, Colo. for approximately one month. c/o Dept. of Electrical Engineering, U. of Colorado, Boulder, Colo. 80302. Itinerary: Boulder, Kern, Calif., Washington, D.C. WTD 9/70 on Weizmann Institute of Science.

NORWAY — Capt. Jan A. Jorgensen, Managing Director, Bathuset A/S, Tollbugaten 32, Oslo 1, interested in representing publishers of **maritime charts and publications,** manufacturers of **marine hardware and boat equipment.** Feb. 12 via Washington, D.C. for one week. c/o Barbizon Terrace Hotel, 2118 Wyoming Ave., NW., Washington, D.C. 20008. Itinerary: to be arranged. WTD in preparation.

Greece To Purchase Radio Communications Equipment

Greece's Public Power Corp. has issued tender No. DEPM/7485/A-14 for the supply of radio communications equipment.

Bid deadline is Feb. 25.

Bid should offer AM/SSB base stations, transceivers, and VHF/FM base stations, mobile and portable transceivers and associated radio link equipment. Copies of tender announcement and specifications are available from the Public Power Corp., 30 Chalkokondyli St., Athens 102-Greece or on a short-term loan basis to firms located in the U.S. from the Communications-Electronics Division, BDC-720, Room 4320 U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-4823)

Ireland Issues Tenders On Automatic Telephone Exchanges

The Engineer-In-Chief, Contracts Section, Department of Posts and Telegraphs has issued tender No. C/610/3/1 for the supply and installation of automatic telephone exchanges.

Bid deadline is March 1.

Copies of tender announcement and specifications are available from the Engineer-In-Chief, Contacts Sec., Dept. of Posts and Telegraphs, Marlborough St., Dublin 1, or on a short-term loan basis to firms located in the U.S. from the Communications-Electronics Division, BDC-720, Room 4320, U.S. Department of Commerce, Washington, D.C. 20230. (202-967-4823).

Malaysia To Build Klang River Bridge

Malaysia's Director-General of Public Works has invited tenders for the construction of a new bridge over the Klang River and a four lane flyover. The bridge will be a four-lane dual carriageway with central reservation and two cycle tracks and footpaths. The main bridge will comprise three 120-ft spans in prestressed concrete and two 38-ft., 9-inch abutment spans. Approach viaducts will comprise eight prestressed concrete spans each 70 ft. and a railway overbridge of two 38-ft., 9-inch spans. The piers both of the river bridge and approach spans will be of reinforced concrete on concrete piles.

The four-lane dual carriageway flyover will be comprised of 10 prestressed concrete spans, each 80 ft. long, on reinforced concrete piers and concrete piles. The total estimated cost of the bridge and flyover is nine million Malaysian dollars.

Civil engineering contractors are invited to apply for prequalification not later than Feb. 14 to the Public Work Dept. Headquarters, Jalan Maxwell, Kuala Lumpur, with a duplicate copy to Messrs. Coode & Partners, 2 Victoria Street, London, S.W. 1, England. Include details of financial standing, availability of the necessary equipment and recent experience (since 1960) as principals in work of this type, in particular, experience driving large concrete piles over tidal water through soft subsoils.

Include year of construction, name and location of bridge, total cost in pounds Sterling, brief description of bridge (superstructure—materials, spans, lanes, loading; substructure—type, size, etc.; if piles, material, length, section), name of consulting engineer, authority, Government to whom reference may be made.

Selected tenderers are required to deposit earnest money in the form of a banker's guarantee of 10,000 Malaysian dollars, which is refundable upon receipt of a bona fide tender.

Kenya Wants Turnkey Plant To Make Galvanized Wire

A firm in Nairobi desires to set up a continuous hot dipped wire galvanization plant to produce plain soft galvanized wire from 5.00 mm up to 0.5 mm with capacity of 500-800 tons monthly, using mechanically descaled hard soap-draw wire from (low carbon) wire rods. Specifications are available from International Business Opportunities, BDC-584, Rm. 4813, U.S. Dept. of Commerce, Washington, D.C. 20230. Detailed offers c.i.f. Mombasa are requested by Nailin Nail Works Ltd., P.O. Box 3530, Nairobi. WTD in prep.

Iran To Buy Ferroalloys And Non-Ferrous Metals

The National Iranian Steel Corp. (NISC) has issued Tender No. 11019, with a bid deadline of Feb. 29, for eight ferroalloy items, including ferrosilicon, ferromanganese, ferrotungsten, ferrovanadium, ferromolybdenum, manganese-silicon, ferrochrome, and seven non-ferrous metals including bronze, brass, copper, tin, aluminum and graphite electrodes.

Copies of tender forms with full particulars may be purchased from Secretariat, Pahlavi Ave., corner of Takhte Jamshid Ave., Tehran. A copy of the specifications and conditions may be reviewed in Room 2001, Iron and Steel Program, U.S. Dept. of Commerce, Washington, D.C. 20230. ★(202-967-4686)

Somalis To Purchase Varied Building Materials

The Somali National Housing Agency wishes to buy materials for construction of low-cost housing, principally cement, timber, asbestos cement roofing, hardboard plywood, and aluminum windows.

Copies of the announcement, which provides additional information on the type and quantities of materials desired, are available from the Construction, Water Resources and Eng. Serv. Div., BDC-742, U.S. Dept. of Commerce, Washington, D.C. 20230 ★(202-967-3602), and the U.S. Dept. of Commerce Field Office, 11444 Federal Bldg., 450 Golden Gate Ave., San Francisco, Calif. 94105 (415-556-5868).

Surinam To Offer Bridge Construction Contract

The Surinam Minister of Public Works and Traffic is expected to publish a tender for construction of 2 two-lane highway bridges in March. One bridge will be over the Commewijne River (approximately 150 meters), and the other over the Saramacca River (approximately 300 meters). The estimated cost of the two bridges is Sf. 3 million (approximately $1.7 million). Financing will be through the Dutch Government over the 1971-75 Five Year Plan.

The specifications for these bridge projects may be available in March. U.S. construction firms may participate by acquiring an operating license, purchasing the specifications and drawings (probably to cost Sf. 150 for each bridge) and special stamped bid forms.

South Africa Wants Cable Carrier Communications

The South African Railways have issued tender No. C 5627 for supply and installation of cable and carrier communications equipment. Bid deadline is April 7.

Copies of tender announcement and specifications are available from the Chief Stores Superintendent's Office S.A.R. Room 802 Melhof, 2 Melle St., Braamfontein, Johannesburg or on a short-term loan basis to firms located in the U.S. from the Communications-Electronics Division, BDC-720, Room 4320, U.S. Department of Commerce, Washington, D.C. 20230. ★(202-967-4823)

French Extend Subway Deadline

The Subway Authority of the City of Marseille, SO.MI.CA, has extended the due date for bids on an international tender from Feb. 1 to April 5. Detailed information is available from: SO.MI.CA, Department du Metro, Villa "Valmer" 271, Corniche J-F. Kennedy, 13 Marseille (73m3), France. Tel. 52.61.94.

See *Commerce Today*, 9/20/71, p.59 and *Commerce Business Daily*, 9/9/71, p.18.

Turkey Seeks Bids On TV Transmitting Stations

The Turkish Radio-Television Association has issued a tender for twelve TV transmitter stations to be integrated into a network operating in Band III VHF (174-223 Mhz). Bid deadline is April 12.

Bid should offer VHF transmitters (Main and standby), six 10kw. and six 5kw. Manual switching equipment, test loads, feeder systems, antennas, SHF and VHF links, diesel generators, tools, and test instruments. Copies of tender announcement and specifications are available only from the Modern Translation Bureau, Karanfil Sokak 49/1 Yenisehir, Ankara for $25 per set.

Korean Police Seek Firefighting Equipment

Korea's National Police request catalogs, specifications, quotations on the following types fire fighting equipment: snorkels, up to 60 m, chemical equipment vehicles, pump cars and high pressure pump cars, ladder trucks, especially those operating automatically from the ground, firefighting helicopters, air hoses, relief tents, searchlight cars, smoke suction cars, ambulances especially built for use during fires, ropes, portable telecommunications equipment, fire-proof clothing, gloves, helmets, water-proof clothing, boots, loudspeakers, fire fighting boat. Interested U.S. firms should write: Col. Park Young Chun, Chief, Fire Dept. Headquarters, National Police, Republic of Korea, 76-2 Sejong-ro, Chongno-Ku, Seoul.

Thailand Announces Tenders On Telecommunications Items

The Foreign Purchasing Section of the Thailand Electric Authority's Supply and Procurement Department has issued tender No. A018 for the supply of telecommunications equipment for EGAT's transmission line and sub-station expansion project. Bid deadline is March 20.

Copies of tender announcement and specifications are available ONLY from the Foreign Purchasing Sect., Supply and Procurement Dept., Electricity Auth. of Thailand, Nonthaburi for $25 per copy.

Kenya Registers Contractors For Road, Bridge Program

The Government of Kenya is preparing a road and bridge construction program with an approximate value of 16,500,000 Kenya pounds (about $48 million). Any major civil engineering contractor not already registered for road construction work in Kenya is invited to apply for prequalification forms to: The Chief Engineer (Roads), Ministry of Works, P.O. Box 30260, Nairobi.

Iran Extends Bid Deadline

The Tehran Regional Electric Company has extended the bid deadline for the supply of panels containing 20 kv. switchgear, circuit breakers and related equipment to Feb. 12. See *Commerce Today*, Dec. 13, p. 65, and *Commerce Business Daily*, Dec. 8, p. 20.

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